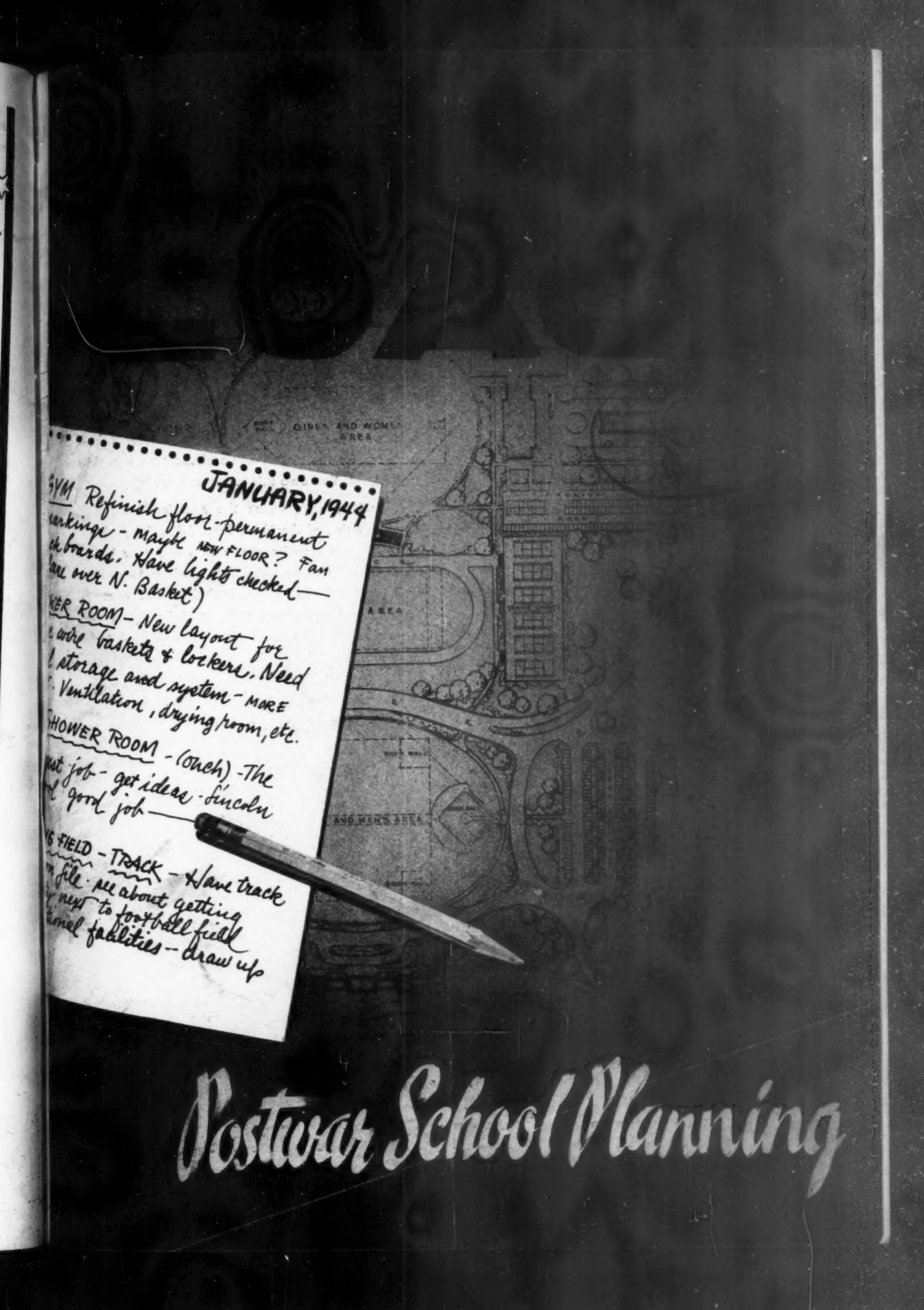
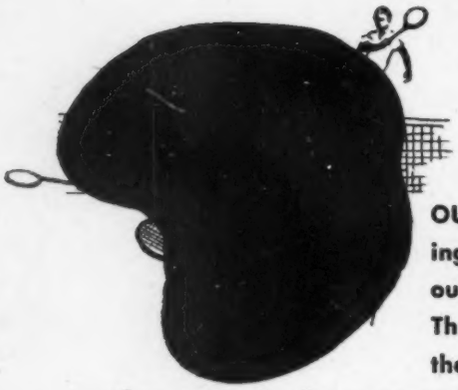

JANUARY, 1944
GYM Refinish floor-permanent
markings - maybe NEW FLOOR? Fan
ch boards. Have lights checked—
lace over N. Basket)
KER ROOM - New layout for
e wire baskets & lockers. Need
storage and system - MORE
. Ventilation, drying room, etc.
SHOWER ROOM - (ouch) - The
ost job - get ideas - Lincoln
d good job—
G FIELD - TRACK - Have track
m file - see about getting
r next to football field
tional facilities - draw up
GIRLS AND WOMEN
AREA
AREA
AND MEN'S AREA
Postwar School Planning

A PERFECT PLACEMENT



OUR boys are outfighting, outsmarting and outlasting our enemies. They know how to feint them out of position, when to apply the pressure and how to keep on driving until the victory is won. They know how to do this because they've been doing it all their lives—in competitive sports.

On every school and college athletic field, our boys are coached and trained to understand competition. There is no better training ground for teamwork, will to win and stamina. We know now that the split-second timing and coordination of yesterday's tennis placement are paying dividends in today's low-flying skip bombing.

That's why sports play an important role in the training of every fighting unit. And that's why you men should be constantly alert to the possibilities of your job. In your hands are the fighters of tomorrow. Make sure they are ready, physically and mentally, for the trials that lie ahead. You owe this to the boys. You owe this to the nation.

The facilities with which the American Net and Twine Division of the Linen Thread Co., Inc., manufactured your favorite sports nets are now being used to make commercial fish nettings to ensure food for our Armed Forces both here and abroad. Your present equipment, with careful nursing, will serve you until the Gold Medal line returns from the wars.

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OF

The Linen Thread Co., Inc., 60 East 42nd St., N. Y. C., 17

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To Chicago Plant War Workers:—

As you know, our country's mighty Army and Navy have awarded the Army & Navy "E"—which stands for excellence in War Production—to the men and women of our Chicago Plant.

In the name of the officers and directors of Wilson Athletic Goods Mfg. Co., Inc., I want to publicly express appreciation for the loyal work which has won for you the privilege of wearing the "E" Emblem. This is the civilian worker's service stripe. You can be as proud of it as the fighting man is of his decoration and as the Company is of the banner that flies above the building of our Chicago Plant.

But because our combined efforts have won this coveted award, we should not be self-satisfied. The war is not yet won. Let us therefore look upon this award as an inspiration and a challenge to outdo what has been done to date and to set a new goal befitting a leader.

Wilson Athletic Goods Mfg. Co., Inc.

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President

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Here Below

*A Glimpse of the Post-War World Through the Eyes of David K. Brace**

SINCE this is an open season for post-war planning, I would like to present a few thoughts on the future of physical education and sports.

There can be no doubt that the post-war world will see increased emphasis on school health and physical education, accompanied by increased building programs. Just as selective service statistics indicated the failure of our peace-time physical fitness programs, so have our wartime fitness programs exposed the inadequacy of our school facilities.

The blame cannot be entirely laid to the remarkable scope of these programs and the added strain thus imposed upon the facilities. Many schools have been guilty of a lack of foresight. In planning their facilities, they have not considered the activity program to be served and the possibility of expansion.

It is with the hope that we can possibly prevent a repetition of such mistakes that the following thoughts on post-war physical education are rather dogmatically presented.

Basic principles

Certain general theses or basic principles should be laid down at the outset. The following are suggested.

1. Physical education facilities must be designed to fit the particular programs they are to serve.
2. New facilities must be planned to meet the needs of wider community use.
3. School facilities must meet the needs of all students.
4. New facilities must permit adaptation to expanding programs.
5. Care must be exercised to prevent the enthusiasm of particular individuals from disturbing a sense of balance and proportion in planning.

Our best present ideas and standards in physical education will still serve in our post-war period. However, there will be a re-emphasis on some aspects of our programs and a de-emphasis on other parts. I would list probable post-war trends as follows:

Probable trends

Trend 1. Expansion in programs to serve the needs of all students, both boys and girls. This will mean emphasis on the 90 percent most in need of physical fitness. It would not mean less emphasis on the 10 percent, the cream of the crop, but that the needs of "varsity" athletes would no longer be allowed to absorb an undue share of facilities, time, money, or staff.

Trend 2. Increased time allotment for physical education. A daily period or three double periods per week will become the practice.

Trend 3. Increased participation. Every student will be required to take some form of physical education. Students will be excused only for health reasons.

Trend 4. More specific and functional instruction in health will be required of all pupils. A specific accredited course in health education for one semester in the junior high school and a corresponding course in the senior high school may be expected. Make-shift devices in health instruction will tend to disappear. The practice of using a physical education period for health instruction will not suffice.

However, we may expect a re-emphasis upon the use of every course and every school situation as an opportunity to teach health. An increase in the number of trained specialized teachers of health is indicated, and the practice of having health education taught by untrained teachers, coaches or otherwise, is due for hard sledding.

Trend 5. Programs for the discovery and correction of health defects will become essential in any good school system. Such programs will call for more school physicians, for programs of closer cooperation with state and local public health authorities, and for more school nurses.

Trend 6. An annual medical examination will be required as a prerequisite to participation in school athletics.

Trend 7. Greater effort will be made to fit activity programs to the needs of individual students. This will mean more use of all sorts of test data and other information relating to students' health, physical abilities, attitudes, and habits.

Teachers and coaches who fail to cooperate in this all-important trend and who continue to think of their job as merely teaching boys how to play sports will find themselves relegated to inferior positions.

Exhaustive record plan

Trend 8. A system of keeping student records will become characteristic of good departments. Such records will include (1) health examination findings, (2) physical fitness scores, (3) data on physical abilities and traits, (4) classification data, (5) achievement scores, (6) records of participation, (7) interests, etc.

Trend 9. Students will be required to make specific achievement in physical education. Achievement standards for each grade level and for various levels of ability will be set up and students will be held for results. Mere attendance and perspiration will no longer suffice as a basis for measuring achievement.

Trend 10. Improvement in physical fitness will become a more important goal. It will not, however, exclude other worthwhile goals, but it will become an essential measuring rod against which to view activities and methods. Activity programs will continue to emphasize more strenuous participation. The

*David K. Brace, one of the nation's foremost physical educators, is Senior Specialist in Physical Fitness for the Federal Security Agency.

SCHOOL PLANTS OF THE FUTURE

by Ray L. Hamon

Senior Specialist in School Plant, U. S. Office of Education

THE war has placed renewed emphasis on physical fitness, and there is every reason to believe that this emphasis will be maintained in the peace years to come. It is essential that we consider both pupils and adults in planning post-war school facilities. Previous standards of space requirements will have to be reconsidered in light of the new demands. The following space allotments and standards are offered only as tentative suggestions.

Grounds: Elementary schools: Five acres plus an additional acre for every 200 pupils enrolled. High schools: Ten acres plus an additional acre for every 200 pupils enrolled. There should be special playground layouts for age, sex, and special interest groups as well as varsity game fields.

Buildings: Indoor recreational areas are essential for every school, especially in the inconsistent weather areas. Combination assembly and recreation areas are not entirely satisfactory, but for small schools with limited budgets this practice may be necessary. Probably the best combination of these facilities is the playing floor flanked on one side by bleachers and on the opposite side by an adequate stage. Recreation rooms should be planned for general programs for all pupils, and not merely as professional gymnasiums for the varsity basketball team. Shower, dressing, and locker rooms are essential, and if adequate facilities are provided, will require approximately as much area as devoted to the playing floor and bleachers.

In planning post-war school buildings, school administrators and architects should give more consideration to adequate sanitary facilities, space for pupil and teacher rest rooms, health and dental clinics, and physical examination and testing rooms.

meeting of basic physical fitness standards will become a prerequisite to election of activities and to participation in inter-school athletics. Said in another way, we may expect to see less substitution of participation in athletics for attendance at physical education classes, except in the case of students who can pass basic physical fitness standards.

Trend 11. We can expect to see school athletics more definitely recognized as a legitimate part of physical education and not as an extra-curricular or separately organized activity. At the same time a school which has only interscholastic athletic teams and a pep squad as its physical education program will be recognized as having a totally inadequate program.

Trend 12. Increased and expanded competitive athletic programs, as part of enlarged physical education programs, can be expected. More teams in more sports will be the rule. Intramural athletic programs will receive greater attention. An effort will be made to have every boy and girl receive experience as a team member in at least two team sports.

Trend 13. More strenuous participation by girls in sports and under proper guidance appears to be a certainty. Occasional commercialized girls athletic teams may appear but the influence of professionally trained women and men will prevent girl athletics from being commercialized.

Trend 14. Expanding programs and greater realization of the need for physical fitness will call for much construction of new facilities. An era of new building seems certain. We will need swimming pools, gymnasiums, athletic fields, and other play areas. All new facilities will, to an increasing extent, be viewed in light of the features of the program they are to serve, and in light of possible services to wider community interests. School and community authorities will view with disfavor athletic fields or gymnasiums which are kept idle a part of the year or whose use is restricted to "varsity" teams.

Trend 15. Specific types of facilities which may be expected to receive first consideration are swimming pools, apparatus for climbing and vaulting, obstacle courses, and athletic fields, in addition to gymnasiums and sports buildings.

Trend 16. The importance of developing in young people recreation interests and skills which will carry over into later-life leisure-time activities as a basis for maintenance of physical fitness will receive post-war attention. Such recreation activities, however, will not be allowed to detract from the basic health and physical fitness needs of students.

Trend 17. More emphasis will be placed on the accreditment of school systems in physical and health education. Accreditment standards will be raised. More colleges will give admission credits for physical education. And more schools and colleges will give academic credit for physical and health education. We may also expect better trained teachers. Men interested in coaching will find that they must qualify as to professional training. Such professional training will probably include a more thorough background in science than is now the practice. Without such scientific training teachers of physical education may find themselves relegated to the role of technicians in exercise.

A great many coaches and teachers will return from the war better trained in physical education than they were before. Many will have a better conception of a balanced program in physical fitness, and they will realize that while sports are extremely important, a program providing only for athletic participation by the most physically fit boys is not adequate.

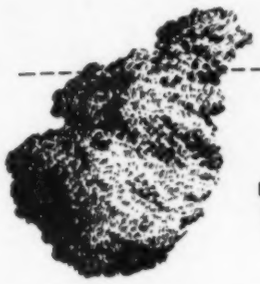
SCHOLASTIC COACH AT YOUR SERVICE

THIS post-war issue of *Scholastic Coach* is intended to serve as a guide in planning for the future. Other issues will contain additional materials on the school plant, which we hope you will find useful.

Meanwhile we invite all our readers to send us their problems and ideas. We promise to give these careful consideration. We'll answer them personally or, if unable to do so, will pass them on to accepted authorities.

If your problem concerns equipment, and you would like the manufacturers to pass judgment on it, we will see that your letter reaches the proper sources. We will be happy to publish any program or equipment ideas that have merit.

By serving as a clearing house for ideas and problems, we hope, first, to facilitate post-war planning for you school men and second, to help to establish firmly the finest physical education and sports program in educational history.



The plain truth about synthetic rubber thread

The amount of publicity that synthetic rubber has had is probably the envy of every star in Hollywood.

Some of the stories have done good service . . . but it's too bad that others have created some false hopes.

Maybe we can clear up the question a little as it applies to athletic supports.

Only a few weeks ago synthetic rubber thread was released for a long list of civilian uses . . . and all over the country athletic goods dealers and athletic coaches envisioned an immediate flood of supports.

Sorry, it doesn't work quite that way.

RUBBER THREAD FOR *ANY* USE . . . IF . . .

The simple truth is that manufacturers *may use* synthetic rubber thread for practically *any* product . . . IF . . . THEY CAN GET THE RUBBER THREAD.

Before they *can* get it, it has to be made . . . and the plants that produce it have either been completely shut down or their staffs have been so reduced that it may be months before rubber thread is being manufactured in quantities even close to the demand.

RUBBER'S ONLY ONE SHORTAGE

And even if plenty of rubber thread *were* immediately available . . . there's a serious shortage of cotton thread with which to cover it . . . there's a serious shortage of people to man the production machines.

And even if these were licked . . . there's still the matter of plant capacity which is ample, normally, to take care of replacement supplies of athletic supports, but far too limited to supply the present tremendous demand quickly.

But these limitations are only part of the problem.

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Synthetic rubber is not like natural rubber. The method of fabricating it into webbing cannot be the same as was used for natural rubber.

Since natural rubber was restricted we've been experimenting with synthetics. We've learned a lot. We know now that Neoprene is, at present, the best synthetic for athletic supports. In some ways it's even better than natural rubber . . . some ways it's not as good.

We know now how to handle Neoprene in our fabricating machinery. We've learned all of the peculiarities of this new and different elastic. We learned it through good, hard research.

SUPPORTS WHEN?

Within a reasonably short time Bike Web will offer you athletic supports made of Neoprene webbing. They'll be good supports . . . in some respects better than those we've made before. They'll be built as perfectly as research can make them. They'll be better than supports made *without* the benefit of long careful experimentation.

They will *not* be ready tomorrow or the day after, and they will *not* be unlimited in quantity.

LOOK BEFORE YOU LEAP

We think you'd be wise to resist jumping at the very first products you may see in the market. We're sure you'd be money ahead to wait a few more weeks to be sure of getting Bike Web athletic supports.

Because we're not selling *anything* until we're sure it's right.

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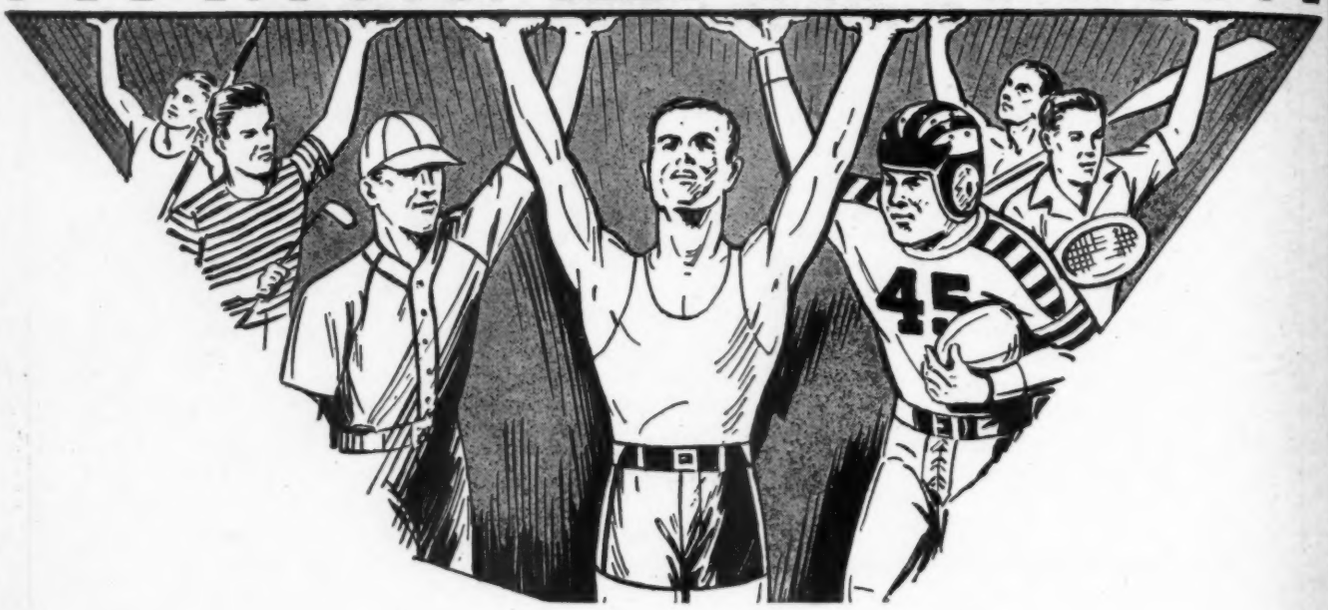

The Physical Education and Athletic departments in our Colleges and Universities are now engaged in their biggest job in history—the physical conditioning of the nation's manpower assigned to them by the Army and Navy.

The High Schools are assuming the responsibility for the development of our youth power—tomorrow's manpower.

The competitive sports program is again proving it's worth in these developing and conditioning activities. Our "Sports-Trained" American boys are proving their superiority on battle fields all over the world. They know how to deliver "Under Fire."

Our intensified programs for physical fitness must be continued and expanded as a part of our Postwar planning. Organized sports and recreation activities must be extended to reach men and women of all ages in order to establish new and higher physical standards for all Americans.

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IT PAYS TO PLAY

DESIGNS FOR THE GYM

by C. L. Wooldridge

C. L. Wooldridge, associate superintendent of buildings of the Pittsburgh Board of Education, originally presented this paper at the 19th annual meeting of the National Council on Schoolhouse Construction.

AN OUNCE of prevention is worth a pound of cure, whether you're thinking of colds or of school gymnasiums. If you don't build up resistance, you catch a cold. If you don't use foresight in your gym planning, you find yourself unable to accommodate increased physical education classes or to provide an adequate program for them.

The average athletic director likes to fill his gym with a lot of apparatus he seldom uses and a lot of bleacher space that is rarely occupied. The wise planner sees that the gym facilities fit the needs of the school. The layout should allow for a good health program, including all the usual games, and should contain a minimum of apparatus and seating accommodations.

In Pittsburgh we've eliminated all apparatus except wands, chinning bars and mats from the elementary school level, and are making progress in that direction in the high schools.

Following are the various games which are generally played in the school gyms, as well as the principal apparatus used:

Game or Apparatus	Elementary	High
Volleyball*	x	x
Basketball (Boys)*	x	x
Basketball (Girls)*		x
Game Ring*	x	
Indoor Baseball*		x
Potato Race*	x	
Shuffle Board*	x	
Paddle Tennis*	x	x
Badminton*	x	x
Wands	x	x
Indian Clubs		x
Dumb Bells		x
Chinning Bar (Folding)	x	
Horizontal Bar (Removable)		x
Parallel Bars (Portable)		x
Short Horse (Portable)		x
Vaulting Horse (Portable)		x
Stall Bars		x
Climbing Ropes		x
Flying Rings		x
Spring Board (Portable)		x
Jumping Board (Portable)		x
Jump Standards (Portable)		x
Net Standards (Portable)		x
Mats (Portable)	x	x
Piano or Phonograph	x	x

*Floor specially marked.

High school gyms fall into three categories: the game gym, the apparatus gym and an elaboration of the double playroom idea, which provides for a gym for boys and a gym for girls with a removable partition that makes it possible to make one large gym out of both.

Layout "A" provides a game gymnasium and an apparatus gymnasium, with dressing and bathing facilities that also serve a swimming pool. The prime requirement of this combination is that it allow either boys or girls to reach any of the three rooms at different times without crossing traffic. This is accomplished by locking specific doors at certain periods.

The game gym is lined for girls' basketball. When used by boys the cross lines are disregarded. The volleyball court is off center. The room is top lighted, which makes the playing conditions ideal in this respect. Special shades are desirable for basketball if either side faces the light.

In the apparatus gym the climbing ropes and flying rings are on a track leading to the side of the room, and the horizontal bars are removable. With the parallel bars, horses, and other portable items in the storage room, the gym floor is left clear for games. The floor markings for basketball and volleyball are extremely flexible, and in many cases, reflect the desire of the individual instructor.

The boys' locker room requires no discussion beyond the suggestion that a drying room adjacent to the shower is very esesntial; otherwise the locker room floor will be constantly wet and sloppy. In the girls' locker room it will be noted that the showers are in separate booths, each with its own drying area. The lockers in each room should be sufficient to serve a class in one gym and a class in the pool.

The basket storage rooms provide a wire basket 8 inches by 12 inches by 7½ inches for each pupil in school, and these are locked in racks. The dressing room lockers have a shelf for the basket; the padlock for the basket also serves on the locker.

The instructors' rooms contain toilet fixtures and a shower. The location of these rooms is important; they should be close to the pupils' entrance to locker rooms. In this plan the instructors' rooms would be improved if the windows looked out into the locker rooms.

The room for athletic suits is very conveniently located and provides shelving for storage of football suits out of season. We consider the laundry essential; if omitted, other laundry service should be furnished. Under no conditions should the pupils be trusted to have their suits and towels washed at home.

A detailed blueprint of the Type A high school gym layout will be found on pages 10 and 11. The Type B gym is blueprinted on pages 38 and 39.

In this layout there is no seating in the apparatus gym. The game gym seats 270 in folding bleachers and the swimming pool fixed bleachers seat 200. Spectators enter the game gym from the stair hall and do not cross the playing floor. Spectators enter the pool bleachers through the long corridor from the main hall.

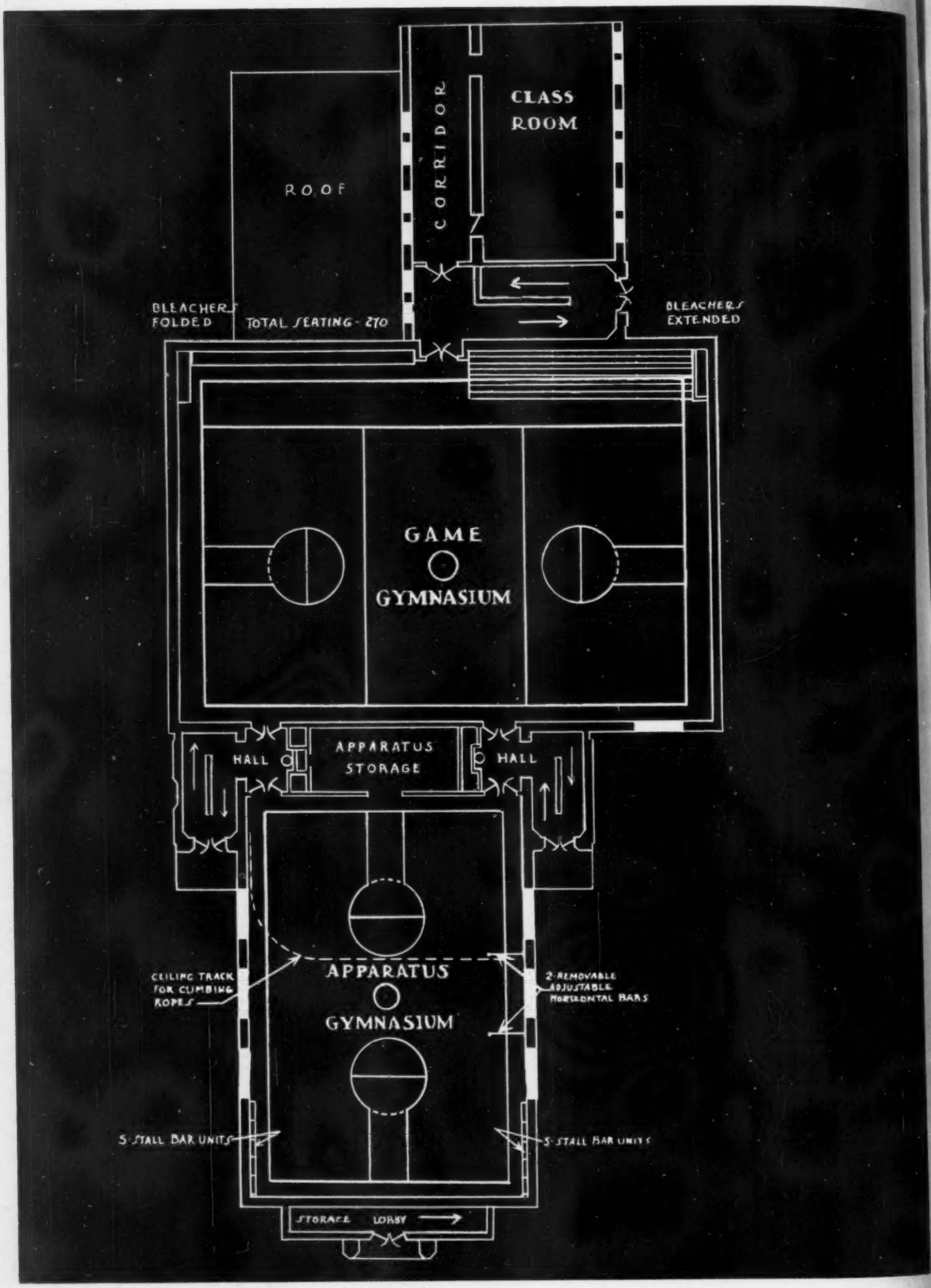
This brings us to the question of seating capacity. It has probably occurred to you that 270 is a very limited audience. However, the total enrollment of this particular school is 810 pupils, and school league basketball is played without any complaint as to the number of seats.

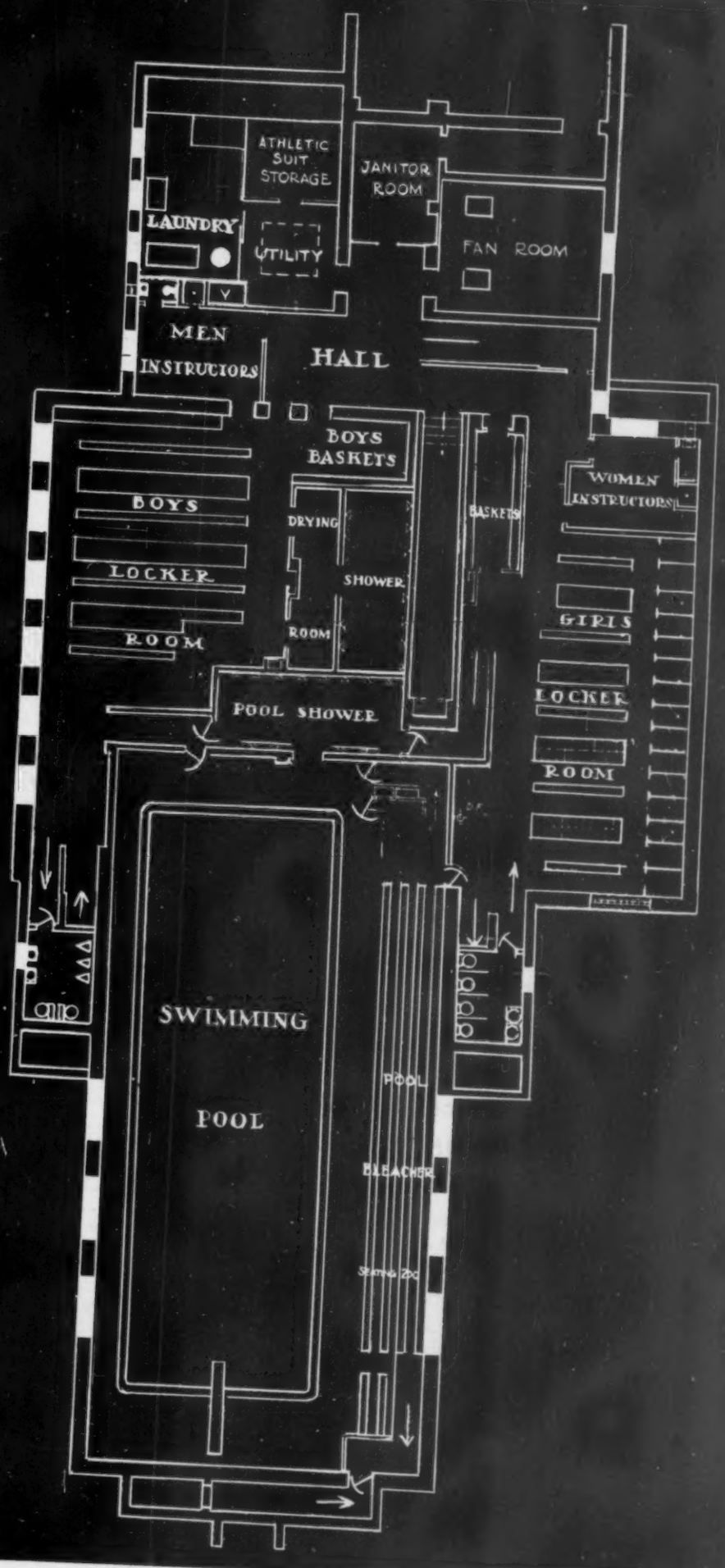
The matter of seating is a question which must be settled by each community. Bench seating requires 3½ square feet of area per seat, allowing for aisles; thus, 1,000 seats will require 3,500 square feet. A height of 30 feet, including roof construction, gives you 105,000 cubic feet to which you can apply your own cubic foot price as the cost of 1,000 seats.

This type of layout is forced by the presence of an apparatus gym. Personally, I feel that all apparatus should be omitted, in which case I prefer Layout "B."

In this layout, we have the conventional boys' and girls' gym arranged so that they can be thrown together into one large gym. With the bleachers folded back, each gym is 38 feet by 64 feet; with the parti-

(Continued on page 37)


ROOF
CORRIDOR
CLASS ROOM
BLEACHERS FOLDED
TOTAL SEATING - 270
BLEACHERS EXTENDED
GAME
GYMNASIUM
HALL
APPARATUS STORAGE
HALL
CEILING TRACK FOR CLIMBING ROPES
APPARATUS
GYMNASIUM
2-REMOVABLE ADJUSTABLE HORIZONTAL BARS
5-STALL BAR UNITS
5-STALL BAR UNITS
STORAGE
LOBBY


ATHLETIC SUIT STORAGE
JANITOR ROOM
LAUNDRY
UTILITY
FAN ROOM
MEN INSTRUCTORS
HALL
BOYS BASKETS
WOMEN INSTRUCTORS
BOYS
DRYING
BASKETS
LOCKER
SHOWER
ROOM
ROOM
GIRLS
POOL SHOWER
LOCKER
ROOM
SWIMMING
POOL
POOL
BLEACHER

FUNCTIONAL GAME AREAS

by Caswell M. Miles

Caswell M. Miles is a supervisor of physical education and recreation in the New York State Education Department.

THE plans for outdoor fields and courts must be given functional emphasis. We can no longer allot just so many square feet per child enrolled in the school, or haphazardly purchase a school or park site without considering its use in terms of the physical education and recreation program.

We must consider the needs of the various groups at peak load periods, such as the afternoon intramural and interschool periods. A study should be made of the number of groups to be served and the different types of activities to be included in the program. The quantity of the different types of courts should be based on these two items.

Multiple courts of specific types will also serve to provide more adequately for out-of-school youth and for adult groups in the community. The dual use of these areas by both school and community groups reduces the unit use cost.

The court areas may well be divided into six general types according to size and shape and the nature of the game. Table 1 gives the details of these six types, including the number of players per court, the number of courts needed to serve a group of 40 and the area required. For example, type I court can well be used for captainball, newcombball, volleyball and similar games. Three courts are listed; generally three such courts will meet the needs of 40 players per period.

Type II court can be used for badminton, table tennis and deck tennis. Eight to ten such courts should be provided in order to serve the needs of a 40-class group.

Other court areas may be added or substituted for those shown in Table 1, depending on the program and the community interests and needs to be served. It has been noted that the areas for all six types of courts total about three acres. The location of these should be such that further additions can be made without destroying the unity of the plan. It is well to locate these courts so that they are easily accessible from the building (see charts).

Courts should be paved with asphalt or other such material, as these surfaces can be used soon after rain and require little maintenance. Lines can be painted on such surface for different types of games so that the courts are ready for use at all times. Net posts should set in sleeves embedded in concrete so that a post can be removed, a cap placed over the sleeve, and the area used for other types of games. In many places, the courts can be flooded so they can be used for skating in cold weather.

Field areas can also be organized according to the type of game. The field areas for junior high school as listed on Table 2 (p. 36) show 6 such types. For example, type I for girls can be used for such games as soccer and fieldball. One such court will provide for 22 players in one period. Type II court for girls is the softball type, including two diamonds which will serve 40 pupils at one time. Similarly, types III and IV will provide for boys.

While there is a similarity in the types of game played by girls and boys, they have different rules; hence, many of these games cannot be used with mixed groups. It is important to give the girls a definite field area which can be lined specifically for their games. The same is true for the boys. Properly lined fields increase the effectiveness of teaching and practice. However, types V and VI can be used alternately by girls and boys. In fact, there may be mixed groups on archery or golf instruction.

School and Community Center Grounds Development Recommended for a Junior High School. Prepared by Caswell M. Miles and Sheffield A. Arnold Inc. (A. Carl Stelling), Landscape Architects & Site Planners, New York

Lacrosse as played by girls is radically different in the restricted use of the crosse. The boys' rules can be modified so that needless hazards are avoided. This game is growing in popularity with both boys and girls.

The dual use of type VI field for lacrosse and golf instruction gives an opportunity to develop instruction in two neglected sports as far as the high school is concerned. Fortunately, the lacrosse field is long enough to provide for driving with the long irons. A net may be placed at the end of the field for the few drives longer than 500 feet (167 yards). Such is the similarity in the swing of the number 2 iron and the brassie that practice on the iron should prove satisfactory for both.

Additional length for the driver, brassie and spoon would be desirable if available. Practice on these clubs may be arranged on an adjoining golf course. Adequate space is provided for practice and instruction on all the irons. Greens may be provided in the corners for instruc-

(Continued on page 35)

TABLE 1—COURT AREAS for JR. or SR. HIGH SCHOOL and COMMUNITY CENTER

Type	Games	No. Per Ct.	No. Cts.	Players per per'd.	Size Court	Area Size	Acres
I	Captainball	14	3	42	30 x 60	50 x 80	.27
	Newcomb	16	3		30 x 60		
	Volleyball	12	3		30 x 60		
II	Badminton	4	8	32	20 x 44	30 x 64	.32
	Paddle tennis	4	8		20 x 44		
	Deck tennis	4	8		18 x 40		
III	Tennis	4	10	40	36 x 78	55 x 120	1.70
	Ice skating in winter						
	Group games when ground is wet						
IV	Handball	4	8	32	20 x 34	40 x 44	.30
	Squash tennis	4	8		22 x 36		
	Squash racquets	4	8		22 x 36		
V	Quoits	4	5	20	25-40*	20 x 74	.17
	Horseshoes	4	5		25-40*		
VI	Lawn bowling	6	4	24	14 x 110	60 x 120	.17
	Landscaping, circulation, safety						.23
				190			3.16

*The stakes can be set 40 feet apart for use by boys and men, and pitching lines can be marked at different distances to suit children (25 feet), girls and women (30 feet).

SCHOOL BUILDING
PARKING AND SERVICE
GYMNASIUM
BOWLING GREENS
QUOITS & HORSESHOES
TYPE III CTS.
TYPE II CTS.
TYPE I COURTS
TYPE IV COURTS
780'
390'
240'
260'
STREET
TYPE IV
BOYS' SOFTBALL
TYPE II
GIRLS' SOFTBALL
TYPE III
BOYS' FIELD
SOCCER RELAYS
TOUCHBALL SPEEDBALL
GOAL
200'
330'
TYPE I
GIRLS' FIELD
SOCCER FIELDBALL
350'
TYPE VI
BOYS AND GIRLS
LACROSSE
GOLF INSTRUCTION
GOAL
1123'
500'
TYPE V
BOYS & GIRLS
ARCHERY
150'

LET THERE BE LIGHT IN THE GYM

by William H. Kahler

William H. Kahler is a lighting engineer for the Westinghouse Electric & Mfg. Co.

LIGHT is not only an educational tool, but a *must* on the recreational facility list. Engineered lighting for nighttime sports has already given millions of people an opportunity to enjoy football, softball and big league baseball in their leisure hours.

The indoor gymnasium, however, has been a forgotten son. Although the gymnasium is used more hours per year than any outdoor sports area, it generally has the poorest lighting. Most school and college gridirons are illuminated far better than their gymnasiums.

Now is the time to take an inventory of that gymnasium lighting system. See if it approaches the standards contained herein, and crystallize your plans for modernization so that you will be ready when materials are available.

Gym standards

As speed and accuracy are prime factors in all sports, athletic areas require seeing conditions that predispose to quick, accurate vision.

1. The first requirement is to provide a sufficient amount of light. An average illumination of 20 footcandles is considered good practice, but higher levels should be considered for the Class I gymnasium of the near future. The speed of seeing is increased as the quantity of lighting is increased.

2. The No. 2 requisite is to minimize direct glare. A bright light source in the line of vision of a player or spectator can completely obliterate the visibility of a ball. Light sources should be well shielded by reflectors. Or, best of all, use a low brightness light source.

3. Illumination should be well distributed not only at floor level, but also high above the floor. Poor lighting will cause a high ball to disappear from view for a few seconds.

4. Light should emanate from many directions to eliminate harsh annoying shadows.

5. Lighting equipment must be designed and installed to resist severe impacts. Any possibility of falling glass due to breakage should be eliminated.

6. Provisions should be made for proper maintenance of the luminaires.

Westinghouse Photos

No wire guard is required on this rugged, dust-tight luminaire as the lens is heat tempered and impact resisting. The Johnny Appleseed Junior High gym at Mansfield, O. (top of page), boasts 30 of these 500-watt luminaires which provide 20 footcandles of well-diffused illumination. Note the remarkable absence of shadows.

Present lighting methods

Practically all gymnasiums at present are lighted with filament lamp luminaires of various designs and sizes. For the most part, these present installations are inadequate in both quality and quantity of illumination. Intensities in the order of 2 to 5 footcandles are common. Glare is a prevailing handicap.

In some of the newer gymnasiums these faults are corrected. The gym-

(Continued on page 46)

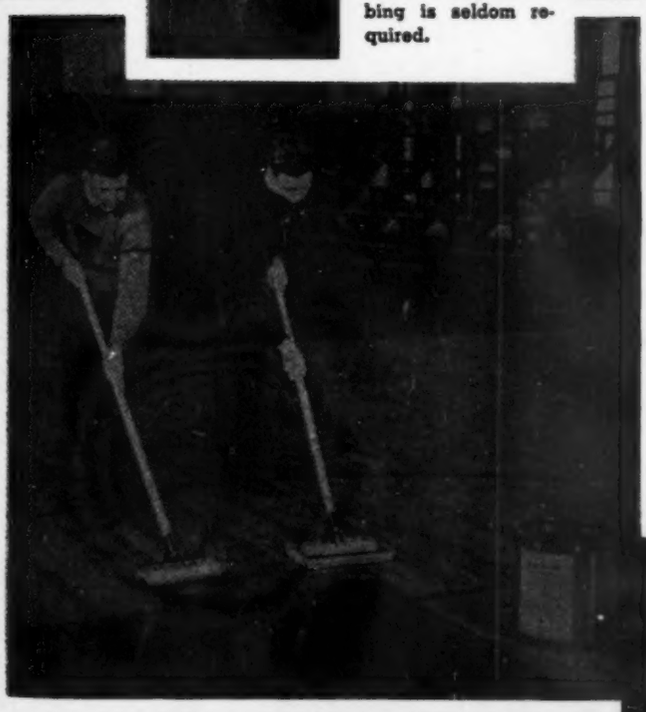
When attendance slumps, try Seal-O-San and watch the crowds back your winning team. A few dollars spent on Seal-O-San floor finish will bring hundreds in gate receipts.

When your players go stale and plays won't "click," a Seal-O-San finish on your floors does wonders. Confident, sure-footing will speed up teamplay, improve moral . . . put "zip" into dribbling, passing and shooting.

A small turnout for basketball? Fewer reserves? Then you can't risk having one of your regulars benched by a skid or fall. You need slip-proof Seal-O-San to keep your squad at peak strength.

When a skid or a fall breaks up your winning combination, better apply Seal-O-San. The 100% non-slip finish prevents floor accidents that endanger championship hopes.

When your gym floor looks unsightly and worn. A Seal-O-San finish will give it new beauty. Easily applied by mop, a Seal-O-San finish is easily kept clean. Costly scrubbing is seldom required.



WHEN THESE THINGS HAPPEN

it's time to apply

SEAL-O-SAN

CHANCES are that a Seal-O-San finish on *your* gym floor can remedy a great many bad breaks . . a slippery floor . . injuries . . poor attendance . . lack of team spirit . . an unsightly playing surface.

This is not merely a claim. It's a *fact* that is backed by the experiences of more than 5350 successful Seal-O-San coaches.

For Seal-O-San gives you a 100% non-slippery gym floor. Thus, it gives your players *positive* traction for quick starts and stops. It helps you build an offense and a defense that "clicks."

Moreover, by preventing skids or falls, Seal-O-San helps to keep your best players in the game.

Put a mop-applied, easily maintained, low-cost Seal-O-San finish on *your* gym floor and overcome the obstacles that interfere with coaching success.

The HUNTINGTON LABORATORIES Inc

DENVER • HUNTINGTON INDIANA • TORONTO

SEAL-O-SAN

From the military, our post-war coach will borrow the Walkie Talkie electronic idea to carry on a running style of instruction.

"SOUND" IDEAS FOR THE FUTURE

by Albert K. Ward

Albert K. Ward is connected with the Industrial Sound Department of the RCA Victor Division.

ALONG with the mechanics of the T formation, sliding zone defenses and double steals, the post-war coach will be able to avail himself of electronic equipment to produce better trained, more efficient teams.

Unfortunately, because of security restrictions, this type of equipment cannot be freely discussed at present. However, the developments which can be revealed may prove valuable to educational institutions in planning their post-war physical education and sports setups.

Happily for all concerned, our electronic engineers have had a great deal of foresight. They planned and designed their equipment so that future developments would increase its effectiveness rather than render it obsolete. The only obsolescence in the future will come from age and length of service—not from electrical developments.

Requirements of the Army and Navy have accelerated progress in the production of amplifiers and loudspeakers. This should work to the advantage of schools, as they will reap the benefit of the improvements and the savings in engineering costs.

These units are the same electrically, but changes in mechanical design have made them more rugged, easier to service and more durable under extreme temperature and weather conditions.

A device known as the sound-powered megaphone will make it possible after the war for cheerleaders' voices to reach every person in the stands. In this electronic device, the microphone and the loudspeaker are combined into a single package, to which is attached a pistol grip for easy handling. One way of supplying power for this unit is a small battery-operated amplifier carried about the body. The total weight of megaphone and amplifier is approximately nine pounds.

Larger equipment of a similar nature can be placed on the ground, in the stadium or on the stage, with the microphone used through an amplifier. More volume is possible through the loudspeaker than through the small portable equipment. At present, these installations have been made large enough to accommodate 15 watts output. This larger sound megaphone amplifier will be built for operation from a 6-volt automobile battery or 110 volts 60 cycles A.C.

Let's not forget the Walkie Talkie. After civilians are allotted frequencies for Walkie Talkies, they will be readily adaptable to school sports programs. A coach seated in the press box or some similar vantage point will be able to use the Walkie Talkie for conveying instructions to assistants on the field. This will enable the coach to put several football units through their drills simultaneously, offer more detailed instructions to track and field performers, or advise and instruct athletes in other outdoor sports.

Similarly, the Walkie Talkie or more permanent type of sound system installation should prove a boon to indoor sports such as basketball. Since it will enable the coach to carry on a running style of instruction, he won't have to keep tooting a whistle while his proteges are staging a fast workout.

Electronic communication equipment should also have a bright future in conveying information to press box or scoreboard. For example, the Walkie Talkie might be employed to advantage by sideline broadcasters to give the down, yardage, substitutions and scoring plays.

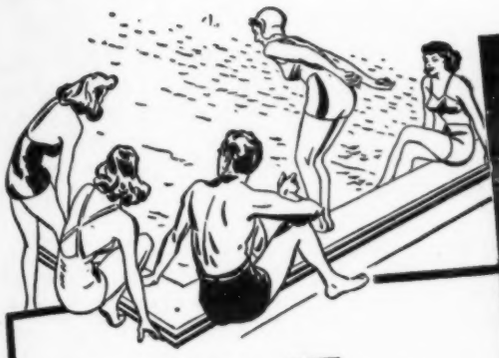
Coaches will get additional assistance in the post-war period from television receivers. This coaching adjunct may not materialize immediately after the war, but it will be available when television networks are developed. Television will enable the coach to watch and maybe scout games in all sections of the country.

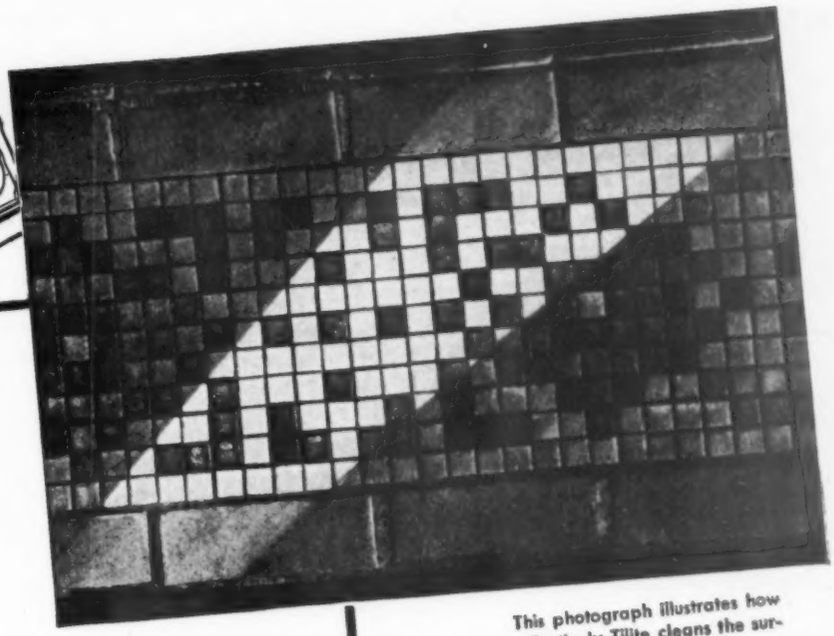
His players, when not in action themselves, may watch these games and learn how the pro and big-time college players perform intricate offensive and defensive maneuvers. It is hoped that students of the game will not have to watch a small six- or twelve-inch picture, but that provisions will be made to project the action on a screen of sufficient size to make it easier to follow the progress of play.

Another important aid to the sports program will be sound film projectors.

Realizing that 16-mm. film is going to play an important role in the postwar world, film companies are rapidly improving their products so that a better picture, with more detail, can be shown. The 16-mm. sound projector itself is being greatly improved to give better light intensity, ease of operation and better sound output. The screen, likewise, is being improved to reflect more light. Thus, with a combination of these three advances, 16-mm. film is likely to approach closely, if not equal, the 35-mm.

DON'T NEGLECT YOUR SWIMMING POOL





This photograph illustrates how effectively Tilite cleans the surface of soiled tile.

KEEP IT LOOKING ITS BEST WITH TILITE

Reg. U. S. Pat. Off.

Don't let soiled and stained tile give your pool an unattractive, run-down appearance! Use Tilite and see walls and floor come back to fresh, sparkling cleanliness.

Tilite works two ways—chemically and mechanically—to clean white mosaic, ceramic and vitrified tile, removing both imbedded dirt and most stains, including rust.

Tilite contains no soap to make cleaned surfaces dangerously slippery.

Let us send you a generous sample of Tilite so that you can see for yourself how quickly, thoroughly and economically it will clean your pool. Return the coupon *now!*

On order, Tilite is supplied in 50, 100 and 200 lb. drums.

FREE SAMPLE MAIL THIS COUPON

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Pennsylvania Salt Manufacturing Co.
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Please send me a free sample of Tilite.

NAME_____

NAME OF POOL_____

ADDRESS_____

THE SOUTH MEETS THE CHALLENGE

By T. Jack Reames

Physical educators below the Mason-Dixon line are sowing a bumper crop of fitness programs

T. Jack Reames, former director of athletics and assistant principal at Parker High School, Greenville, S. C., is at present physical fitness representative in the Southeastern States under the Federal Security Agency. He is also president of the South Carolina Physical Fitness Instructors and chairman of the Public School Division of the Southern Health, Physical Education and Recreation Association.

TODAY the "chips" are down on all the far-flung war fronts and home fronts. The potentials of force are being mobilized and utilized as never before in history.

The physical and moral issues of this total war are myriad. But the conflict itself is predicated on the oldest law of nature—the survival of the fittest. The ruthless strong have always preyed on the weak; the price of softness has been extermination or slavery.

The ancient Athenians survived as long as they remained fit. When they let their bodies go, they were conquered by the lean, hard Spartans, who clung to one ideal—discipline of the body. The Romans, too, paid the price for physical degeneration. They were a soft touch for the Huns under Attila. It was the same old story when Genghis Khan swooped down on the peoples of Asia and eastern Europe.

All this is ancient history. And we should have learned something therefrom. But, like the Athenians, France, Britain and America relaxed mentally and physically after the last war. And almost suffered a like fate when the ruthless powers struck. We all know how dangerously close to defeat they came because of their unpreparedness. But the dictators overlooked two vital factors: The bulldog tenacity of the British and the fighting spirit of the Americans.

President's warning

Yes, America as a nation was getting soft. After seeing the National Guard in military maneuvers in 1940, President Roosevelt said: "America is getting soft. If we are to survive, we cannot be soft in a world in which there are dangers." Hitler iterated the President: "America is soft. It will be easy. A prey—big, soft, fat and rich."

We all remember the cry that was raised during the first World War when approximately 33 percent of our manpower was found unfit for military service. In fact, we can trace the birth of functional physical education to that time. At the close of that terrible war, we were all determined that it "would never happen again."

Athletics came into their own in the "golden twenties" and reached a glorious peak. Then came the "tinsel thirties." Investigation of football dynasties, charges and counter charges of commercialism, eligibility squabbles, and the fear that major sports were eclipsing the academic side of university life occupied the thinking of physical educators.

Spectatoritis

With this came the realization that America had the finest athletes in the world in any given field, but, also, that America was the greatest "spectator" nation on earth. Five percent of our youth was superbly trained; the other 95 percent was all but forgotten. There were many fine physical education programs in operation, but not enough.

In some sections, physical education consisted of little more than short, free play periods. In other sections, it was largely a matter of "throwing out the ball." In still others, it comprised only a dash of calisthenics.

Some institutions insisted on a "tough" program of ping pong, horseshoe pitching, dart throwing, clock golf, and Chinese checkers. Now these activities are enjoyable and have some recreational value. They fit perfectly into the educational scheme of leisure-time activities. But they do not furnish that *something* our young Americans need—combatives and other tough physical activities.

Then came Pearl Harbor and we were face to face with stern reality. Industry quickly answered the war's demands. America was geared for mass production of weapons of steel. But weapons of steel require men of steel to man them. We had to train them.

Men sprang into the breach. Physical fitness became the catchword. Lieutenant Commander Tom Hamilton took over in the preflight schools. Lieutenant Commander Gene Tunney did the job for the Navy. Lieutenant Commander Jack Dempsey worked hard with the Coast Guard. Colonel Ted Bank took over for the Army. Hundreds of thousands have assisted in the job of conditioning our service men, and they have done magnificently.

The National Committee on Physical Fitness which functions under the Federal Security Agency is doing the job in civilian life. John B. Kelly, former Olympic star, and a man of wide athletic experience, is directly in charge of this work. He is ably assisted by Dr. Frank S. Lloyd, who is executive officer; George R. Holstrom, who is in charge of field operations, and Lou Schroder, his assistant chief; Dr. Harlan Metcalfe, executive officer of institutional planning; Dr. David K. Brace, executive officer of schools and colleges; Dr. Franz Shuck, medical advisor loaned by the department of public health; and Ira Walsh in promotion.

Under the Office of Education we have the Victory Corps, which functions in the secondary schools. This program has been instrumental in spreading the gospel of physical education to every town and hamlet in the nation.

Looking ahead

This brings us to the vital question of the future. Physical educators are grateful for the impetus their programs have received from the war, and are eager to plan for the future. Men like Dean Matherly, of the University of Florida, state director of physical fitness, and George L. Burr, state director of the O.C.D., are collaborating on a program called The Youths Security League of Florida. This program includes emergency as well as post-war plans and has as one of its objectives, a better fit citizenry.

In Georgia, Chancellor Sanford, of the University of Georgia, is operating an up-to-the-minute physical education program, and the public schools are also doing a fine job in this respect. Coach Bill Alexander, a natural leader, is sold on the idea that we must definitely plan for expanded programs after the war. He sees a need for more teachers and facilities and a much

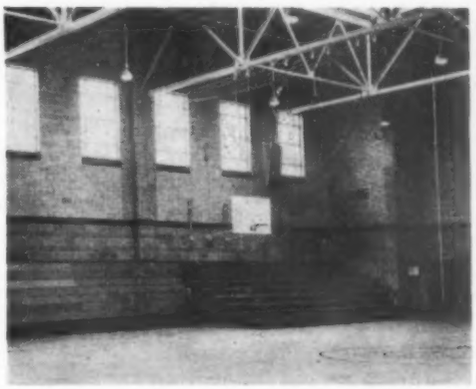
(Continued on page 31)

Horn

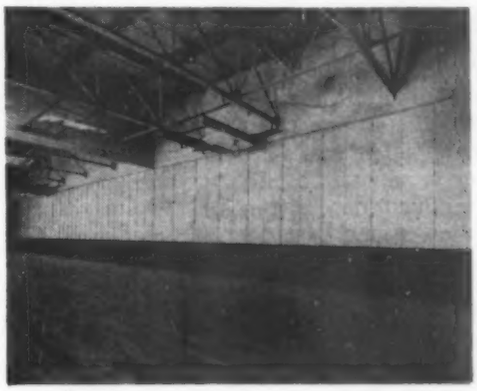
When you Plan for the Future

LET TESTED PERFORMANCE DECIDE

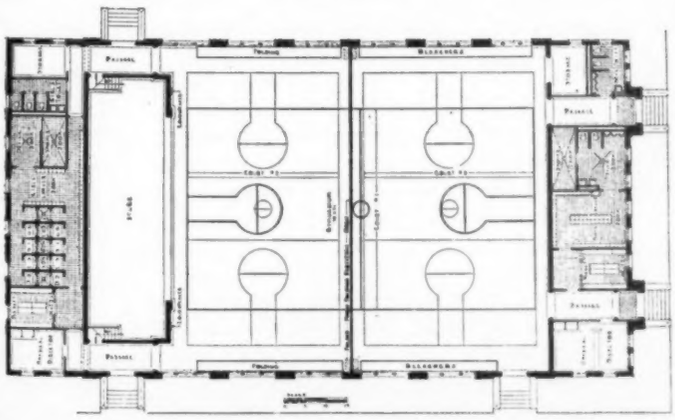
Include Horn Folding Partitions and Horn Folding Bleachers in the plans for Post-War gymnasiums. Include them because they insure the most efficient use of space, rapid and easy adaptability to requirements, and perfect performance for continuous use. Be certain to specify Horn Folding Partitions, Horn Folding Bleachers . . . . With a background of expert engineering and distinguished craftsmanship, Horn Partitions and Horn Bleachers are the logical choice.



Horn Folding Bleachers provide safe, comfortable gymnasium seating; compactly fold into minimun space when not in use.



Horn Folding Partitions allow easy and efficient divisions of gymnasium areas for practice, classes, and exhibition games. The Horn Partition illustrated is 150 feet long and 30 feet high, electrically operated.



A typical gymnasium plan, using Horn Folding Partitions and Horn Folding Bleachers. Let Horn Engineers help you plan. Complete data, layouts, and cost estimates will be gladly supplied.

HORN MANUFACTURING COMPANY

FORT DODGE, IOWA

POST-WAR LOCKER AND SHOWER FACILITIES

by I. O. Friswold

I. O. Friswold, director of buildings and business administration of the Minnesota State Department of Education, has developed this article from several treatises on planning locker and shower facilities that he prepared for the National Council on Schoolhouse Construction, the National Assn. of Public School Business Officials and the American School and University.

THE intensification of our physical education programs has served to direct attention to the need for a more careful planning of facilities. More and more schools are discovering that their locker and shower provisions are woefully inadequate for their expanded programs.

The situation is not entirely a consequence of the sudden turn of events. While it is true that many plants were planned and constructed before the physical education program had been fully developed, and that lack of funds has also been a factor, the inadequate provisions for housing physical education activities in a great many schools (both old and new) can be explained only by lack of information and lack of planning.

The following check list has been prepared with a view to assisting school men and others in planning locker and shower facilities for physical education. Attention is called to questions that should be considered in planning such facilities, and an attempt has been made to present pertinent suggestions.

It should be clearly understood, however, that the primary purpose of the check list is to raise questions for the consideration of planners and not to present immutable standards which locker and shower provisions should meet.

Program

For what physical education program must dressing and shower facilities be provided?

1. With what classes or years in school will a physical education program requiring pupil use of locker and shower facilities begin and end?
2. How many boys and how many girls will be enrolled?
3. How many pupils, minimum and maximum, will be assigned to each class section?
4. How many periods each week will each class section be scheduled to use locker and shower facilities?
5. Will a swimming pool be provided or more than one gymnasium?
6. Will classes be scheduled in the pool and in one or more gymnasiums during a given class hour?
7. Will the schedule provide for overlapping classes?
8. How much time will be allotted for dressing before class and for bathing and dressing after physical education periods?
9. To what extent will out-of-school groups use physical education facilities?
10. What future extensions or modifications of the program may be anticipated?

Questions such as these must be asked and answered before an adequate basis can be secured for planning locker and shower provisions for physical education.

Location

Locker and shower facilities should be located so as to provide ready and direct communication to and from them and gymnasiums, pools, playfields, and classrooms. Ideally, they should be located adjacent to and on the same floor levels as the gymnasiums and the natatoriums they serve, but in addition to (1) accessibility, it is important that consideration also be given to (2) the availability of adequate space and (3) proper segregation of such facilities from the public.

Space provisions

Service facilities, in addition to locker and shower rooms, are needed. Instructors' offices, examination rooms, towel rooms, laundry service, drying rooms, storage rooms, and, where athletic teams or community groups also use physical education facilities, team rooms and auxiliary locker, shower, storage and office provisions must, in many instances, be provided. In every case, adequate provision for toilet facilities should be made.

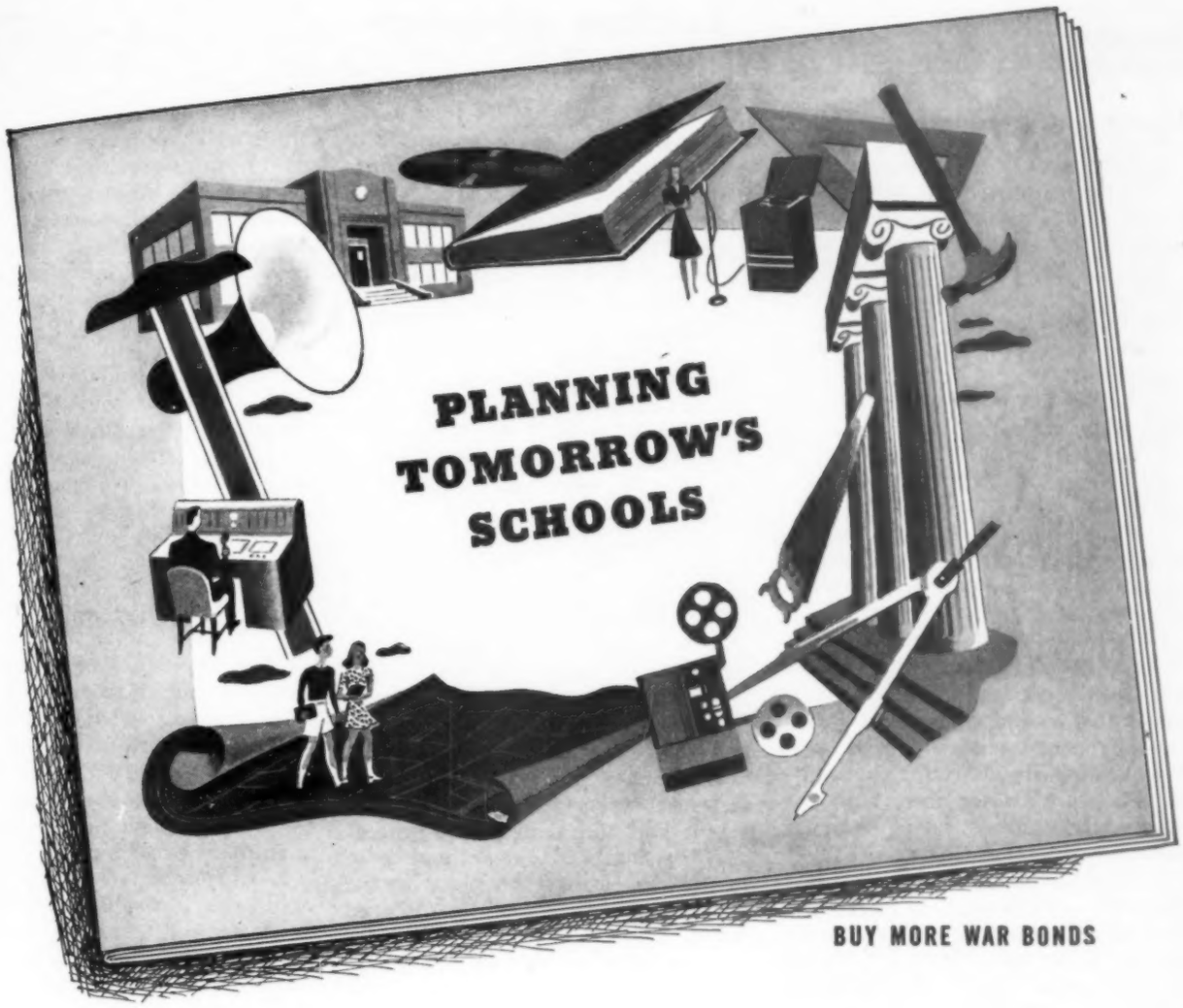
Although attention is here called to the need for other space provisions in connection with locker and shower rooms, such facilities must be determined by the local program. To the extent that health, recreation, and physical education programs are determined in advance and clearly visualized in operation, it will be possible to anticipate the need for various types of space provisions, including locker and shower facilities.

Layout of space provisions

Utmost consideration should be given to space provisions to eliminate cross-traffic, reduce pupil travel to a minimum, avoid points of congestion, promote hygienic conditions, and simplify the administration and supervision of service facilities.

1. Ideally, instructors' offices should be located between the pool or gymnasium and the locker rooms so that a view of both can be secured from them. If this is not feasible, they should be located so as to permit a view of the locker and shower areas from them.
2. Towel rooms, if such are provided, should be located either near the door opening on a public corridor through which pupils enter or leave the locker room, or adjacent to the drying room.
3. Locker-room toilet facilities should be readily accessible from the line of travel of pupils to the shower room. Water-closets or urinals should not be located in the shower room itself or the drying room for bathers. Likewise, they should not be located at the end of the locker room most remote from shower facilities.
4. Where swimming pools are present, the layout should be such as to route pupils from locker rooms to toilets to showers to foot-baths to the entrance of the natatorium.
5. Examination rooms should adjoin both the instructor's office and the locker room. Where training rooms are provided they should adjoin team rooms or locker rooms.
6. Drying rooms for bathers should be so located that they are entered from the shower areas and open directly into locker rooms or dressing space.
7. Drying rooms for suits, basket lockers, or equipment should be located to provide direct access to them from dressing and locker areas.
8. Storage space for supplies or

(Continued on page 22)



AFTER victory is won we will be living in a new world—a world vastly changed by years of war —a world so shrunken by radio and the airplane that we Americans will be neighbors with the most distant parts of the earth—a world in which the responsibilities of our educational system will be far greater than ever before. Indeed, America's schools, along with America's adult population, must be ready to meet the increased responsibilities of citizenship in this new world if a permanent peace is to be maintained.

It's a big assignment, but America's schools will handle it. Progress-minded school administrators, school-board members, teachers and architects are planning now for this critically important post-war era in education. Their planning involves improvements in curriculum and teaching methods — in school buildings and equipment—and in the construction of new schools, built to accommodate modern equipment.

* * *

RCA has prepared a booklet to help all those who are interested in "planning tomorrow's schools." School administrators and others desiring more specific details concerning school building construction or renovation should consult their architects and electrical contractors. Additional information may also be secured by writing to the Educational Department, RCA Victor Division, Radio Corporation of America, Camden, New Jersey.

For your copy of the booklet just use the handy coupon below.

RCA

RCA Victor Division—Educational Department

RADIO CORPORATION OF AMERICA

Camden, N. J.

The Educational Department, RCA Victor Division
Radio Corporation of America, Camden, N. J.

Gentlemen:
Please send me a copy of your new book "Planning Tomorrow's Schools." Thank you.

Name .....

School and Title .....

City ..... State .....

physical education equipment should be placed with due regard to accessibility under conditions of use.

Locker and dressing rooms

The number and placement of these facilities will be determined by the number and location of gymnasiums or swimming pools provided in the school plant. The dimensions and interior arrangement of a given locker and dressing room should be based upon the sex and number of pupils which must be accommodated, the largest number that must be cared for at a given time, and the type of locker system or dressing facilities that are provided.

Locker and dressing provisions may consist of any one of several types. The more common provisions are the following:

1. *Individual lockers.*—Each pupil is assigned a full-length or double tier locker equipped with a lock, preferably a combination lock which can be opened with a master key. This is suggested only for the smaller schools with not more than one or two sections of boys' or girls' physical education classes.

2. *Combination common and box lockers.* — Each pupil is assigned a box or gym-suit locker. For each five to seven box lockers, a larger or full-length locker is provided in which, at different times, five to seven pupils keep their street clothes during physical education periods. Padlocks on pupils' box lockers are used on the larger street-clothes lockers during class periods.

3. *Combination fixed and basket lockers.* — A sufficient number of full-length lockers are provided to care for the number of pupils in the largest class section. Each pupil is provided with an individual basket locker for gymnasium apparel. Basket lockers may be kept in a special basket locker room under the control of an attendant who distributes them to pupils, or they may be housed in metal racks which can be wheeled to and from a basket locker storage room.

Under these plans, only the basket lockers for a given class are accessible to pupils during a given class period. The basket lockers of pupils not in class are fully protected, and special provisions can be made to ventilate the basket locker storage room to dry apparel and eliminate offensive odors. This plan can be recommended for public schools having two or more sections in boys' and girls' classes.

Lockers - Showers

(Continued from page 20)

There are several other types of locker equipment and dressing provisions which prove satisfactory for public school buildings. In every case, however, locker and dressing room provisions should be planned in relation to local school needs and the size and form of the space allocated for these purposes. In this connection I wish to make the following suggestions:

1. Fixed lockers should be arranged with due regard to windows to assure the most effective natural illumination that can be secured.

2. Lockers large enough to accommodate street clothes properly should not be less than 1 foot x 1 foot x 30 inches in size.

3. If double-tier lockers are installed, a sufficient number should be provided so that only one of each two lockers would be used during a given class period.

4. Benches preferably should be fastened securely to the floor and provide not less than 12 and preferably at least 18 linear inches of seating space for each pupil in the peak load. They should be placed not less than 1 foot 6 inches from the lockers to insure adequate dressing space.

5. Care should be exercised to provide well-planned, adequate communication from locker or dressing space to other facilities such as basket lockers, toilets, showers, etc. Main aisles should be 4 feet wide, and where two benches serve opposite rows of lockers and run parallel to each other, a minimum clearance of 20 inches between benches should be sought.

6. Fixed lockers without legs should rest on raised platforms about 4 inches high. In any case lockers should be designed to permit ready cleaning of the floor and prevent accumulation of dust and refuse under them.

Shower facilities

Most shower rooms do not have a sufficient number of shower heads for the number of pupils that must be served. The number of shower outlets that should be provided depends not only on (1) the number of pupils in the largest class, but also on (2) whether gang or individual cubicles are provided, and on (3) the length of time that is allotted for bathing and dressing.

At present, it is encouraging to note that there is a marked trend toward gang showers for girls as well as boys. Gang showers require less floor area, involve a smaller initial outlay, require less operating cost, and can be more effectively supervised, maintained, and kept clean than the same number of individual showers. It is highly desirable, however, when gang showers are provided for girls, that they should be supplemented by one or more individual shower and dressing cubicles.

Where gang showers are provided, one shower outlet suffices for three to five pupils. Where individual showers are provided directly accessible to one or more dressing cubicles, one shower should be provided for one to three dressing cubicles.

Additional suggestions

Relative to shower provisions, —the following additional suggestions are presented:

1. It is important that the amount of shower-room floor area provided per shower head be ample. Fifteen to 20 square feet per shower outlet should be provided.

2. In connection with gang showers, it is desirable that a drying room or platform for bathers be provided large enough to allow at least 15 square feet of drying space floor area for each three to five pupils in the peak load or largest class section.

3. The disadvantages of the lane, zone, or progressive battery showers probably outweigh their advantages except where pupils or others are required to pass through a spray before entering the swimming pool.

4. Side-wall fixtures with pipes accessible from plumbing chamber or exposed in shower room are preferable to overhead plumbing and fixtures. Chrome fittings, non-corrosive concealed piping, fixtures bolted through walls to withstand rough use, and as tamper-proof as possible, are desirable.

5. Shower heads should be ball and socket instead of rigid type, self-cleaning, and such as to conserve water by restricting spread of shower spray.

6. Mounting height of shower heads should correspond to shoulder height of pupils, and mounting height of soap dispenser should be 2 feet lower and the mixing valve about 2 feet 4 inches below that of the shower heads.

7. Individual shower control by

(Continued on page 26)

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Post-War Locker and Shower Facilities

(Continued from page 22)

means of a mixing valve for hot and cold water for each outlet is satisfactory, but thermostatic control of maximum hot water temperature should be provided. Central control by an attendant is probably preferable for children in primary grades, but intermediate grade, junior and senior high school pupils should be taught to be self-sufficient. Some schools, however, find it highly desirable to control the temperature and supply water by means of a valve operated by the instructor. Where such installations are made, it is desirable to have one or more shower heads under individual control so that not all outlets need be used when only one or two persons wish to use the showers at a given time.

8. Showers and drying rooms for bathers should be drained to the sides instead of the center of the floor. Drains should be ample to care for the run-off at peak loads.

9. Shower rooms should be fully partitioned off from locker or dressing space, but cased openings without curtains should be provided for direct communication. The use of cloth curtains should be avoided; privacy and protection from water might better be achieved by the use of appropriate partitions.

Auxiliary service facilities

Well-planned shower and locker rooms should be provided with facilities in addition to bathing and dressing facilities as such. Among these, attention should be paid to the following:

1. *Sanitary fixtures.* — Shower and dressing rooms should never be located in regular toilet rooms, but every locker room should be provided with a sufficient number of water-closets, urinals, and wash-bowls to care adequately for the needs of the number of pupils in the largest physical education class.

For a class of 40 boys, one urinal, one water-closet, and one lavatory, and for a class of 40 girls one wash-bowl and one water-closet represent minimum provisions.

2. Soap should be supplied in connection with showers and wash-bowls, preferably in the form of liquid soap with one manually operated dispenser to serve each wash-bowl, each individual shower cubicle or each two gang shower fixtures. Cake soap is preferred by some, and particularly in shower rooms, and for such, appropriate wall receptacles should be provided. Powder is effective, but requires individual containers. Liquid soap has the advantage of being economical, and it can be piped to outlets from a central source where the supply on hand can be readily determined or replaced with a minimum of effort and delay.

3. Hair-drying equipment should be considered essential in every girls' locker room, and particularly so if a swimming pool is operated. Individual hair dryers have certain advantages, but, everything considered, a series of outlets to which heated air is forced by a centrally located blower appears more desirable. Hair-drying equipment usually is not provided in boys' locker rooms, but a minimum of one dryer for each ten or fifteen boys should be supplied. It appears that about 85 per cent of the girls using the swimming pool during a class period find it necessary to use hair dryers. If less than fifteen minutes is allotted for shower, dressing, and hair drying, one hair dryer for every two girls appears necessary.

4. Few dressing rooms are supplied with a sufficient number of mirrors. Ample mirror space should be provided, with needs of smaller as well as larger pupils in mind, and preferably should be located on the wall in line with the exit leading to study or classroom facilities rather than above wash-bowls.

5. Paper towels housed in suitable dispensers should be located, so as to be accessible to pupils using wash-bowls; and, obviously, a suitable waste can should be provided near the towel dispenser.

6. A drinking fountain should be provided in each locker room.

7. Foot-bath receptacles should not be sunk in the floor; suitable portable surface type receptacles are preferable.

Heating and ventilation

Heating provisions should be such as to maintain comfortable temperatures in dressing and bathing areas, and the ventilation system should reduce condensation and eliminate odors without causing appreciable drafts or excessive noise.

1. A dressing room temperature of not less than 72° F. should be maintained. This should be accomplished primarily by direct radiation, or, preferably, by a combination of direct radiation and unit heaters. Automatic temperature control should be specified.

2. Ventilation can best be accomplished by supplying tempered air from a central fan system or unit ventilators and venting it mechanically by means of an exhaust fan through independent vent ducts. Ideally, such vent ducts should be capped by an effective roof ventilator and equipped with back-draft and by-pass dampers or otherwise designed so that air may be vented positively even when the exhaust fan is not operated. Air to be vented can be routed to advantage from locker or dressing space through shower rooms, so that the same vent ducts can serve both bathing and dressing areas.

Vent ducts

3. In many instances, it is advantageous to draw air from a gymnasium or corridor into locker rooms through ducts opening at the ceiling line, thereby reducing the cost of the ventilating installation and its operation. It is obviously desirable that, with such air supply, ducts should be designed to insure privacy to locker-room users, and that provision be made for whatever controls are needed to prevent appreciable drafts.

4. Where vent ducts serving basket locker or equipment drying rooms are equipped with exhaust fans, the supply of air to such rooms should be planned so as not to throw the ventilation of locker or dressing space out of balance.

5. To avoid excessive condensation and simplify ventilation problems, shower facilities should be located on or near inside walls, and outside windows should not open directly into shower space.

6. In general, six to ten air changes per hour are needed to secure adequate ventilation of locker and shower rooms.

Illumination

1. A minimum of 5 foot-candles of illumination and preferably at least 10, should be provided. Natural illumination has much to com-

(Continued on page 45)

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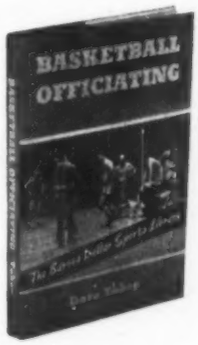

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OUTDOOR SPORTS UNDER THE LIGHTS

Where laid out carefully, combination play areas may be served by the same floodlights

By R. J. Swackhamer

R. J. Swackhamer is affiliated with the General Electric Illuminating Laboratory.

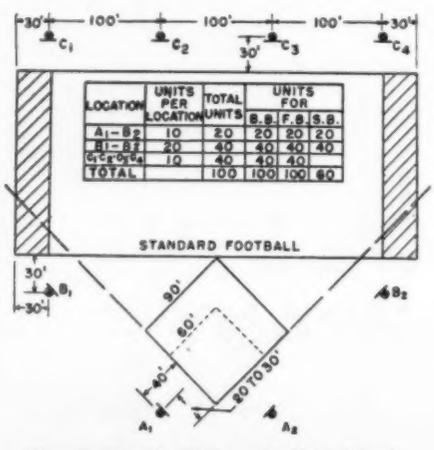
PEOPLE who "saw the light" back in 1930 when organized baseball made its initial plunge into floodlighting may pardonably sit back today and say, "I told you so." Over 2000 schools and colleges are now playing nocturnal schedules, which have become a routine part of community life.

These schedules have proven very remunerative. In most cases, they have meant more money for coaches and equipment, plus invaluable prestige and interest in the school and its activities.

As you know, revenue from football frequently carries the non-profit sports. Night football has enhanced this revenue, and the additional funds thus made available have sustained many well-planned sports curriculums. Illuminated tennis courts, lighted ice rinks, and softball all have had their share in keeping youth off the streets and student participation at a high level.

With the post-war trend definitely toward more and better lighted sports areas, the following recommendations, based on experience gained through the planning of many such installations, will prove of interest.

Combination Baseball, Football and Softball Lighting. If the recreation areas in question are still in the formative stage, proper planning will make them readily adaptable to floodlighting. If such planning is not kept in mind, lighting may well prove expensive and even then not particularly satisfactory.



LOCATION	UNITS PER LOCATION	TOTAL UNITS	UNITS FOR		
			S.B.	F.B.	S.B.
A_1-B_2	10	20	20	20	20
B_1-B_2	20	40	40	40	40
$C_1C_2C_3C_4$	10	40	40	40	
TOTAL		100	100	100	60

Fig. 1, Football-Baseball-Softball

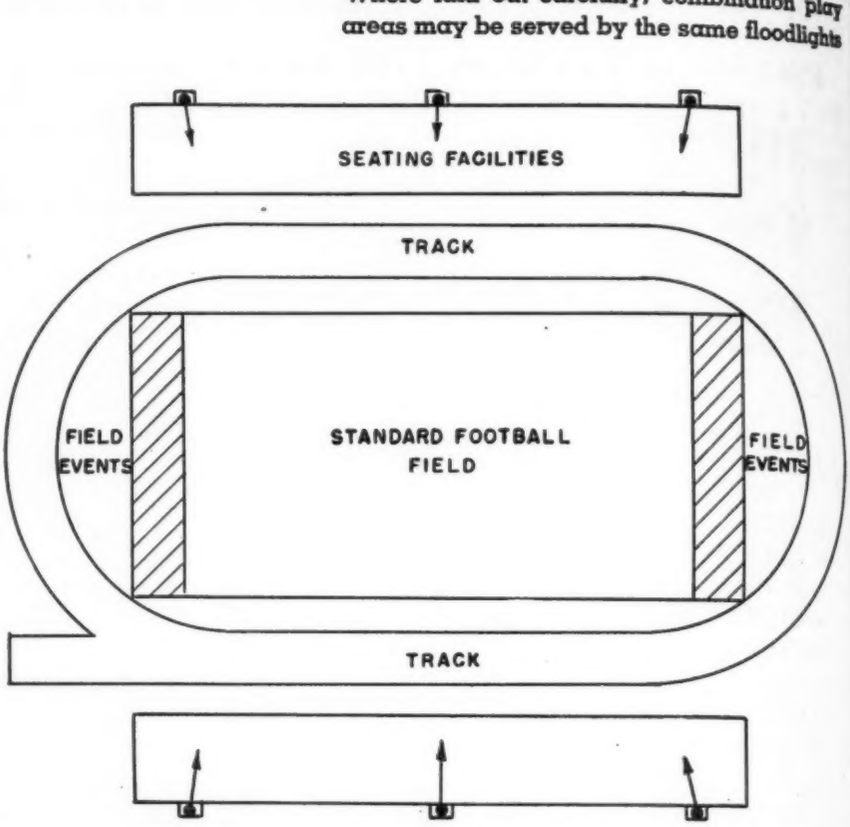


Fig. 4. Floodlighting Installation for Sports Stadium

This is particularly true in areas where two or three sports are played on the same plot of ground. Take, for example, a baseball, football and softball field. If laid out carefully on the same plot, they can be lighted from the same set of lights. Otherwise more lights and continuous readjustment may be required.

Successful night baseball demands a high level of illumination with minimum glare and an even distribution of light on the field for clear seeing on the part of players and spectators. If the arrangement in Fig. 1 is used, the same floodlights will serve for all three sports. When softball is played, some of the lights used for the other two sports can be turned off by means of an inexpensive electrical control.

Selection of proper equipment, installation in correct locations, and the observance of recommended mounting heights are all important for providing maximum visibility and enjoyment for spectator and player. In general, the enclosed type of floodlight is preferable to the open type, since door glasses not only protect the lamps but also prevent accumulations of dust and dirt on the lamps and reflectors.

General Football and Softball Athletic Field. Where space is at a premium, softball and football fields

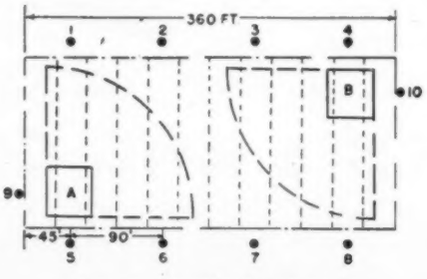
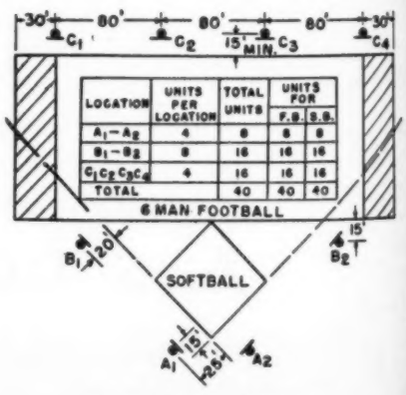


Fig. 2, Football-Softball



LOCATION	UNITS PER LOCATION	TOTAL UNITS	UNITS FOR	
			F.B.	S.B.
A_1-A_2	4	8	8	8
B_1-B_2	8	16	16	16
$C_1C_2C_3C_4$	4	16	16	16
TOTAL		40	40	40

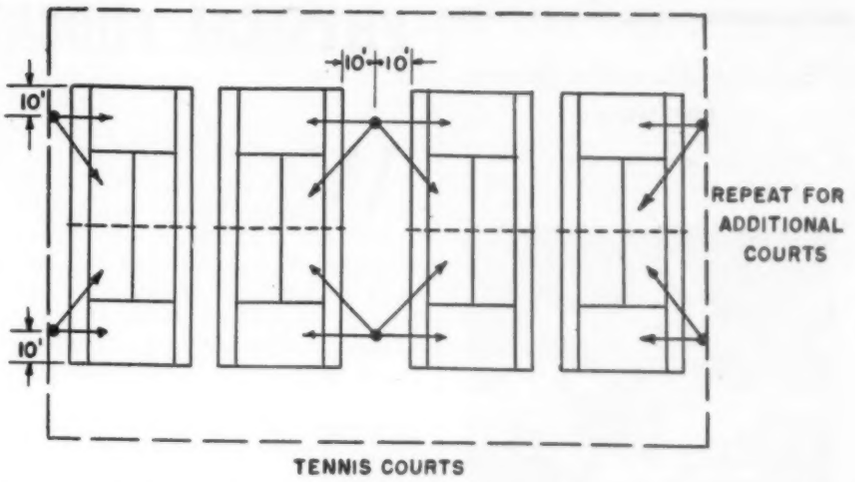
Fig. 3, Softball-Sixman

may be combined in the same area. Such an arrangement is shown in Fig. 2. Two softball fields are accommodated easily on the one football field, with the same lights used for either sport. Locations 9 and 10 are not needed for football.

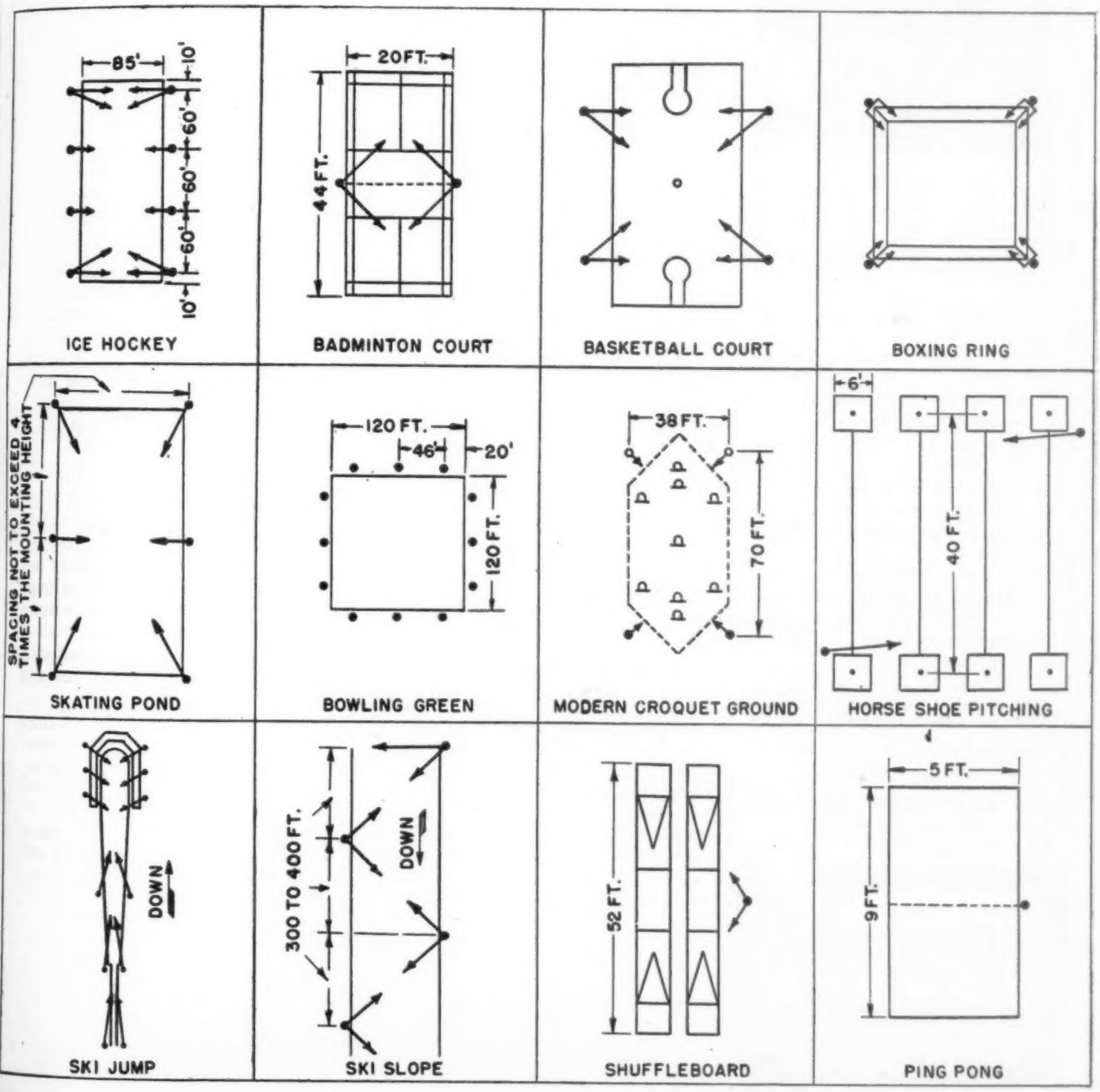
Softball and Six-Man Football Field. Figure 3 indicates where the floodlights should be placed for a combination softball and six-man football field, and the relation of the softball diamond to the football field. All the lights are used in either sport.

In stadiums, the floodlights generally are mounted behind the seating facilities. The number of floodlights used varies with the class of

(Concluded on page 48)



Above: Fig. 5, showing how four tennis courts may be advantageously lighted by a six-pole layout. Below: Fig. 6, lighting chart for the recreational type of activity.



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PHYSICAL EDUCATION LOOKS AHEAD

by H. V. Porter

WARTIME is a period of change. We see it tangibly in industrial and political life, and feel it in the sudden changes in popular opinion and in our difficulty to move in planned directions. Hence it is difficult to make predictions for next month or next season and doubly difficult to conject the probabilities of the post-war era. There are, however, a few clues which permit certain deductions.

The past two years of rapid change in the educational field have proved that the school athletic and physical fitness departments have as many lives as the proverbial cat. Transportation difficulties threatened to kill them. Man-power shortage, alleged lack of interest, inability to secure adequate equipment, lack of time by students with part-time work in industry—each was paraded as a lethal agent. But all these have been taken in stride.

In some cases, adversity has been turned into opportunity. Lack of travel facilities have resulted in the elimination of long distance trips for a few and the introduction of short trip schedules for a greater number of teams. The inability of team followers to travel to distant games has caused greater attendance at home games.

Publicity agencies have had few big sectional contests to exploit, with the result that they are devoting more space and time to heretofore neglected activities. The publicity angle is not significant except as it helps maintain the community's interest in the activity of their school and the welfare of their students.

Values acknowledged

Since the athletic and fitness programs have withstood adverse war conditions and coped with the many handicaps, it seems apparent that the post-war era will see an increased appreciation of their values. Every service agency has acknowledged that this work has contributed to the ability of men to meet emergencies requiring endurance, strength and coordinating ability—both mental and physical.

These same abilities will be needed in the adjustment period following the war, as this period will be just as much an emergency as that of the war or of the depression of the early thirties. Nationwide attention to physical fitness will certainly continue as long as we clearly remember the sudden rise of the destructive dictatorships and the threat of invasion.

The main idea now is to spread the benefits of sports participation and other fitness activity to all students. It is reasonable to predict that the determination to do this will continue after the war. If it does, the schools will find it necessary to increase their play-field, gymnasium, corrective and dressing room facilities and the training staff. Men who return from the service will exert a great deal of influence in this direction and state and national governmental agencies will be active.

Guidance will be needed

The school administrative forces must anticipate such action and be ready to guide it into constructive channels. Good movements are sometimes "killed with kindness"; any given sport can be inadvertently liquidated as a force for good by "working it to death." The high schools have been blessed with efficient machinery that exercises reasonable controls to prevent wildcat exploitation of teams. This machinery, developed over the past 50 years, must be kept intact and must be continually strengthened in anticipation of a great post-war growth in fitness activity.

Sports have made and will continue to make great contributions to the school fitness program. But great vigilance will always be required to prevent well-meaning but misguided individuals or groups from promoting a type of activity that contributes to the reputation of a few at the expense of depriving the many of training facilities and manpower.

If the future can be judged from the immediate past, mass participation in sports and other fitness activities is going to be the general practice in the post-war era.

The future is up to the school man. The athletic administrator who sees only calamity in the war-restricted activity program and who fails to recognize the opportunity is a defeatist and his cause is a lost one. The educator with courage will seize the opportunity to propagate the importance of fitness and to build a program of activities that will reach all.

The South Meets the Challenge

(Continued from page 18)

wider use of facilities now available.

In Alabama, Miss Jessie Garrison, State Director of Physical Fitness, has been untiring in her efforts to see that the forgotten 95 percent is fit as well as the great mass of civilians.

Tennessee and Mississippi are doing an excellent job.

Picture in South Carolina

In South Carolina, a state not overly blessed with personnel, money or equipment, Paul McLeod former coach of Furman University, has done an outstanding bit of work. He has been director of physical fitness, first under the O.C.D., and then under the Department of Education. Many of his plans have been widely used by other states.

All these people have one thing in common. They realize this is a golden opportunity to make America really physically fit—to give true meaning to those hackneyed expressions: "a strong mind in a strong body," "athletics for all." Furthermore, these people, along with many others, are doing something about it. They are striving to:

1. Insure physical and medical checkups and follow ups for all school children.
2. Offer health service for all adults.
3. Emphasize three health features for all; namely, physical, social and mental.
4. Have a definite daily time allotment for rigorous physical fitness activities.
5. Institute a recognized curriculum.
6. Obtain competent teachers and more of them.
7. Greatly expand facilities, such as larger and more numerous playgrounds and gymnasia.
8. Include adults in programs of physical fitness.

The two public school systems of Greenville, S. C., are already operating an extended school activities program which is reaching many people. The Parker District of Greenville, S. C., has already started extending its facilities. They are developing a 100-acre camp about 20 miles from Greenville, as an auxiliary arm of the school, and have already begun the development of a 30-acre tract of land in the heart of their district, which will be a community center for all kinds of activities, including physical fitness.

We've learned our lesson

America definitely was soft when this war started, but surely this time we have learned our lesson. We must as a nation, never allow ourselves to become soft and lax again. We must always remember the dicta of such leaders as General Sir Harold Alexander, Commanding General of the British Desert Army, who said: ". . . The physical fitness of an army is one of the most important battle winning factors in modern war"; and General Douglas MacArthur: "On the fields of friendly strife are sown the seeds which, in other years on other fields, will bear the fruits of victory."

Hand in hand with winning the peace after we win the war, must go the winning and preserving of the health and strength of our nation.

THEY'VE GOT TO TAKE IT—

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THE LEAGUE is beginning the 24th basketball season with 115 more teams than last year.

If you have something for this column send it to Scholastic Coach, "Coaches' Corner Dept.," 220 E. 42 St., New York 17, N. Y.

Once upon a time the big bad Chicago Bears thought it would be fun to needle their pet mastodon, Bronko Nagurski. They asked him how he grew up to be so big and strong and how he kept in such wonderful shape. The Bronk said he got that way plowing fields. They all hooted at this and pointed out that everyone present had plowed at one time or another.

"Without horses?" asked the Bronk, lifting an eyebrow.

Nat Machlowitz, the NYU grid great of 1933-35 who piloted Washington Irving High of Tarrytown, N. Y., to an unbeaten season the past fall, believes he had the highest scoring back in captivity in Ray Rico, a Mexican-Indian greyhound who chalked up 27 touchdowns and 4 extra points for a total of 166 points—an average of nearly 21 a game. Anybody have a boy who did better?

When Albie Booth, the 140-pound Yale flash of the early '30s, reported in his sophomore year, he tried to compensate for his size with a big front. His first day at the training table, he found himself sandwiched between two giant tackles. The waiter approached and asked the tackle at his left how he'd like his steak. "Rare, very rare," growled the behemoth. "How about you?" he inquired of the tackle on the right. "Just singe it a little," grunted the fellow. "And you?" the waiter said, turning to Albie.

"Well," drawled Albie, "just turn the steer loose and I'll tear off a hunk as he goes by."

One of our favorite ball players in our hero-worshipping days was Rogers Hornsby, the greatest right-hand hitter in baseball history. Over a 23-year career, the Raj compiled a nifty .358 average, led the National League batters seven times and hit over .400 three times. Despite these herculean feats, Hornsby was always being traded away. His blunt, outspoken habits seldom endeared him to his owners. Which accounts for what we think is one of the oddest records in the book. He made the *Sporting News* all-star team four years in a row (1926-29)—with four different teams! St. Louis, New York, Boston, and Chicago, in order.

"You might be interested in an unusual incident in the football career of Jack Hinkle, the Philadelphia-Pittsburgh pro team's block-busting half-back," writes Alden J. Danks, Milton, Pa., High mentor. "Back in 1935, in his senior year at right half for the championship Milton eleven, he made the cleverest and most unusual run ever witnessed in this section.

"With Milton leading Shamokin 12-7 in the final quarter, Hinkle took the ball in mid-field, broke through the line and found himself close to the sideline with the umpire between him and the Shamokin backs. The umpire cut toward the center to avoid the Shamokin players, but Hinkle, shrewdly sizing up the situation, quickly broke toward the center with the official. The official then headed toward the sideline but again Hinkle broke with him, using him as interference. This continued for about 30 yards before Hinkle finally cut loose from his 'interference' and went the remaining distance for the clinching touchdown.

"Another interesting sidelight is that Tom Miller, right end on the pro Steagles, played on the same Milton team as Hinkle. I believe they are the only two boys who played high school and pro football together. The Hinkle-Miller team ushered in a golden era for Milton; we've lost only five games out of the past 70."

The Cubs were walloping the White Sox in a spring training game in 1940. And this was a crushing triumph, 18 to 1, in which homer after homer was knocked over the center-field wall. In the White Sox dugout between innings, Moose Solters complained in mock bitterness: "That Mike Kreevich is plenty dumb. I keep telling him how to play center field but he won't listen to me."

"Well, what do you keep telling him, Moose?" inquired a teammate.

"Why, I keep telling him how to stop those Cub drives over the fence. I keep telling him to play deeper and HIGHER."

St. Peter and St. Thomas Aquinas were playing golf one heavenly day. St. Peter stepped up to the first tee, banged one 525 yards straight down the fairway and watched the ball roll in for a hole in one. St. Thomas then took his turn on the tee and duplicated the shot. They proceeded to the second tee. St. Peter hit a lulu 350 yards for another hole in one. St. Thomas stepped up, bang—also a hole in one.

They covered the first nine holes in this fashion, matching hole-in-one for hole-in-one. On the tenth tee, St. Peter turned to St. Thomas and said, "What do you say, Tom, shall we cut out the miracles and play golf?"

During the first half of the Army-Navy game, while even the coaches were blanching at the carnage on the field, Jack Lavalle, the Notre Dame scout, comforted one and all in the stands. "It's all right to let the boys have their fun," he said, "as long as they don't come up here after us."

The old Carlisle Indians were playing Pennsylvania back in 1911. At a crucial point, the referee called for a measurement for first down. It was close, but Sweet Corn, the great Indian guard, sighed hopelessly and walked away. He was a Sioux, and his folks were at Wounded Knee.

"How can we expect white man to give us three inches of ground," he

sneered, "when white man stole the Black Hills, killed the buffalo and killed our families?"

Who said the foot in football is dead? Last season Harold White set a new Texas record (as well as a national record, so far as we know) by kicking 13 points after touchdown in Breckenridge High's 103-0 shellacking of Mineral Wells. White tried 15 times and made 11 in a row before missing.

Sports lost one of its finest friends when Senator W. Warren Barbour, Republican, of New Jersey, passed away on Nov. 22. The hard-hitting, clear-thinking Senator was amateur heavyweight champion of the U. S. and Canada in 1910-11, and retained his interest in sport the rest of his life. He was timekeeper the historic day Dempsey knocked out Willard.

Mr. Barbour attended the Browning School in New York and entered Princeton University. But he never matriculated. He decided to enter his father's business—The Linen Thread Co. On his father's death in 1917, he was elected president of the company. He interrupted his service with the company only to serve in the Mexican border campaign of 1916 and to act as treasurer of the Preparedness Day Parade in New York.

Football is a wonderful game when you're winning. Sportsmanship comes easy; it's a swell time to talk about character building. But what about the boys on a losing team? Is football worthwhile when you're taking a beating every week? Can anything fine and decent be built out of steady beatings?

Here is an excerpt from a letter Lou Little, Columbia's great coach, wrote to Herb McCracken, *Scholastic Coach's* publisher. Columbia had the worst season in its history last fall. They lost every game by a big score. Did the boys get anything out of all the beatings they took? Lou writes:

"Well, we had a pretty hard time of it this fall. Our squad was composed of youngsters. Some of them hadn't played a great deal even during their high school days. But I want to tell you how proud I am of these boys. They didn't have a great deal of football ability, as you know, but I never coached a squad that was more determined and liked to play more than these kids did.

"They didn't care whom they played or how often they played. The manner in which they practiced all week you'd think they were winning all the games and having a grand season. Can you imagine it, Herb, when I went to the dressing room after the (last) game Saturday, they were saying they wished they had more games to play! There they were—battered and bruised and still wanting to carry on.

"They certainly taught me a lesson in what it means never to give up, no matter how the game is going. I think their football this year was nothing short of miraculous. Here was a group of boys knowing they couldn't possibly win, but still fighting right up to the final whistle regardless of how the game was going. Do you know in the Navy game, 56 points behind, when Navy was trying to kick the extra point, they were in there charging as though the game depended on that point!

"I am sure the way these boys handled themselves and what they gave football has made a better coach of me. I feel sure they gave more to me than I could possibly give to them."

Honors keep piling on. The latest testimonial to the worth of sports and sports equipment is the awarding of the Army-Navy "E" to the Wilson Athletic Goods Mfg. Co. for excellence in war production. There, if any further proof was needed that sports are essential, is the evidence. The "E" isn't an indiscriminately tossed around award. Only plants turning out essential equipment can earn it. The latest award is a nice feather in the hats of Wilson and the sporting goods industry in general.

Wilson, incidentally, did a bang up job of broadcasting the Bears-Redskins championship pro battle. Harry Wismer was at the mike.

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Pyra-Seal is a war casualty. In its immense Victory Program, our Government needs all types of chemicals including certain synthetic resins and vegetable oils of the types used in the manufacture of PYRA-SEAL and similar pre-war Gymnasium floor seals. Because of this urgent need these materials are restricted under government order and *are no longer available for the manufacture of floor seals.* After the war—or when restrictions are lifted—PYRA-SEAL WILL BE BACK.

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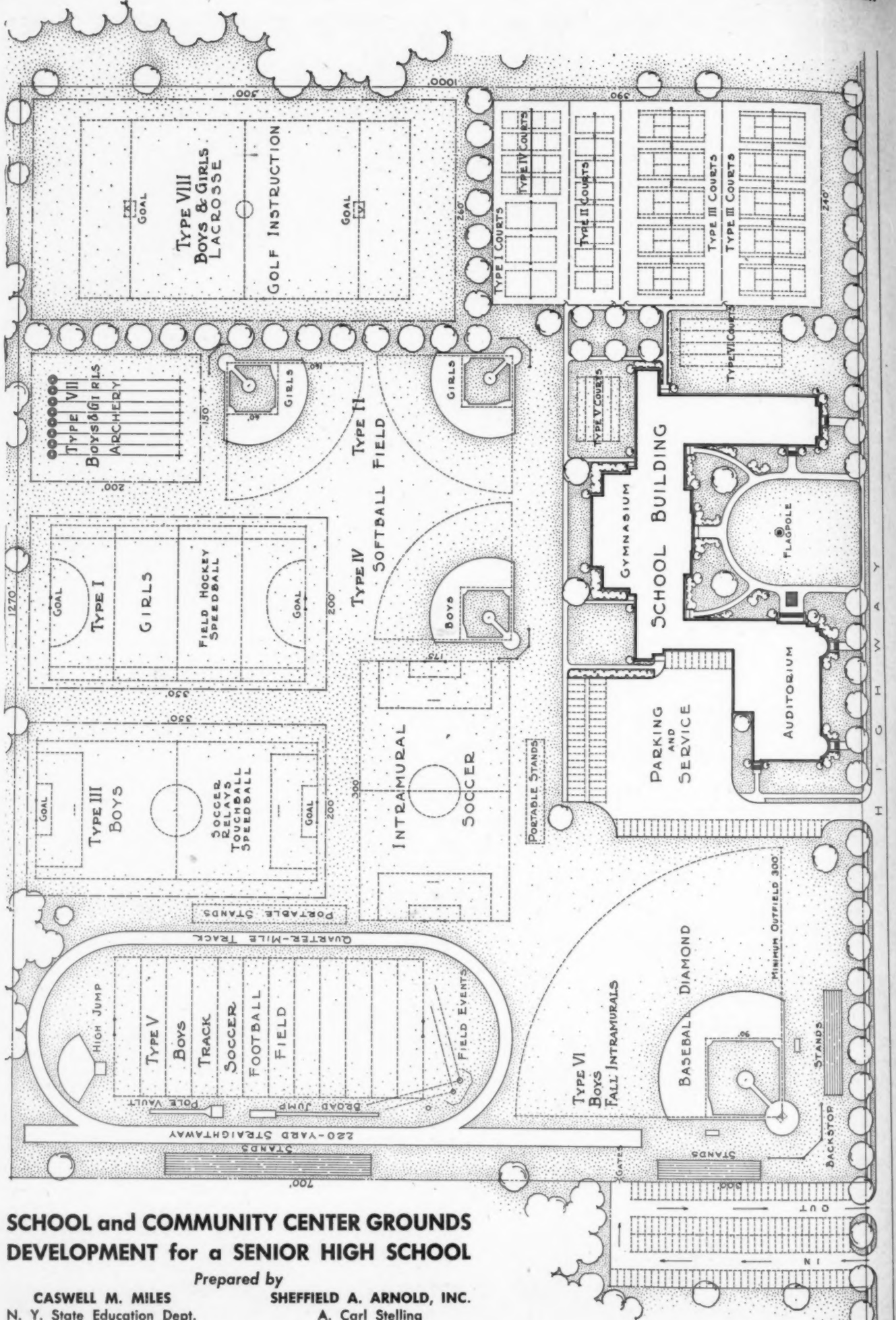

SCHOOL and COMMUNITY CENTER GROUNDS DEVELOPMENT for a SENIOR HIGH SCHOOL

Prepared by

CASWELL M. MILES
N. Y. State Education Dept.

SHEFFIELD A. ARNOLD, INC.
A. Carl Stelling

Functional Areas

(Continued from page 12)

tion in pitching and putting. At any rate, golf has such a large place in the leisure of the community that schools can no longer neglect specific instruction and practice in this sport.

The total number of individuals served in one period on the six types of fields in Table 2 is 176. Adding the 190 who are served in the court areas listed on Table 1, the total number of pupils served by the junior high school field and court areas comes to 366. These facilities will serve 9 class groups of 40 each at one time.

The fields for the senior high school and community center differ from the junior high school in that provision is made for interschool sports and more intensive intramural competition. Table 3 shows the provision of eight types of areas. For example, in type I there are two areas that can be used by girls for such games as field hockey and speedball. Type II is specifically set up for softball but can be also used for soccer in the fall. These two types of fields can serve a total of 75 girls per period.

The areas for boys are arranged according to four types. Types III and IV are largely used for intramural activities. While some intramural use of types V and VI is made, these are essentially interschool athletic fields. The baseball field is located separately from the track since both are spring sports and the baseball field does not fit inside an oval track.

The football type of field can well be located inside the oval and this field can be used for intramural sports in the spring without interfering much with track practice.

The most desirable orientation of the baseball field is that position in which the late afternoon rays of the sun will shine at right angles to the line between pitcher and catcher. This gives the batter, the catcher and the pitcher protection against the sun in the final, crucial innings. The position of the setting sun in the midsection of New York State varies from 6.9° north of west on April 1 to 33.6° north of west on July 21. Therefore, the most desirable location of home plate would be 20° east of north or 20° west of south. The third most suitable location is 45° west of south.

The field areas for the senior high school and community center con-

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3. GENERAL PLAY	(large)	General Play Fleece	7.20 doz.
4. FLEECE KIT	Two No. 1, Two No. 2, One No. 3		1.75 kit

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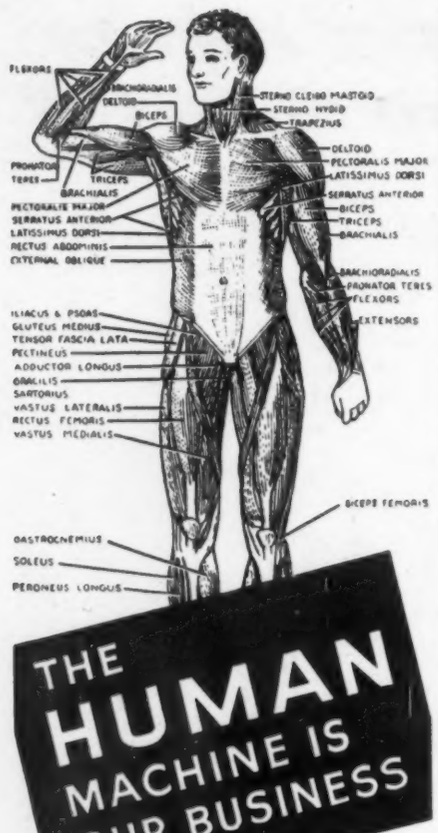

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OUR factory is unique in American wartime industry. Some factories make guns, planes, tanks—the machines of war. But, our business is the HUMAN machine. . . . For many years American children have spent countless happy hours on Porter-equipped playgrounds—and in Porter-equipped gymnasiums and swimming pools. Now grown up, many of these youngsters serve on battlefronts, thankful that farsighted educators and social leaders provided for their physical development in childhood and in youth. . . . Come V-Day, Porter will again provide America's schools, clubs, parks and playgrounds with America's finest physical fitness apparatus. Meanwhile, almost all our production is for the U. S. armed forces. . . . The WPB, however, has approved release of some gymnasium items to schools with physical education programs approved by the U. S. Office of Education—in order that American children today may be made strong for tomorrow. List on request.

Makers of the famous "Spalding," "Chicago" and "Louden" lines of gymnasium, playground and swimming pool equipment.

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OTTAWA, ILLINOIS

TABLE 2—FIELD AREAS for JUNIOR HIGH SCHOOL and COMMUNITY CENTER

Type	Season	Games	No. Fields	Total Players	Players per per'd.	Field Size	Area Size	Acres
		GIRLS AND WOMEN						
I	Fall	Soccer	1	22	22	150 x 300	200 x 350	1.6
	Spring	Fieldball		22				
II	Spring-Fall	Softball	2	40	40	45	240 x 330	1.8
					62			3.2
		BOYS AND MEN						
III	Fall	Soccer	1	22	22	150 x 300	200 x 350	1.6
	Spring	Relays		30				
	Fall	Touchball		22				
	Spring	Speedball		22				
IV	Spring-Fall	Softball	2	40	40	45	240 x 330	1.8
					62			3.2
		GIRLS, WOMEN, BOYS AND MEN						
V	Spring-Fall	Archery	(8 targ.)	32	32	100 x 150	150 x 200	.7
VI	Fall	Lacrosse (g.)	1	20	20	210 x 450	200 x 260	2.9
	Spring	Lacrosse (b.)	1	20				
	Spring	Golf Instr.		24				
					52			3.67
	Landscaping, circulation, seating and safety							2.8
					176			12.5

tain six types of field areas and six types of court areas. The field areas will serve 247 pupils at one time and the court areas 190, making a total of 537 individuals who can be served at the same time. This would provide for about 14 class groups at one time.

This is not as liberal a provision as it sounds because programs must be planned to emphasize sports within season, thus making more intensive use of certain types of facilities at certain times. With afternoon intramural and inter-school groups, in schools of over 500, facilities will have to be scheduled on alternate noons or periods.

Outdoor areas that are functionally planned for physical education and for recreation activities are not costly when compared to teaching space within the building. In most cities and villages there is usually a choice of several sites with considerable acreage. It is generally possible to purchase a large site at the edge of the city for the price that would be paid for a few blocks in a congested area.

TABLE 3—FIELD AREAS for SENIOR HIGH SCHOOL and COMMUNITY CENTER

Type	Season	Games	No. Fields	Total Players	Players per per'd.	Field Size	Area Size	Acres
		GIRLS AND WOMEN						
I	Fall	Field Hockey	2	44	44	180 x 300	200 x 350	3.2
	Spring	Speedball	2	44				
II	Fall	Soccer	1	22	31	60	250 x 250	1.43
	Spring	Softball	2	40				
					75			4.6
		BOYS AND MEN						
III	Fall	Soccer	1	22	22	160 x 330	200 x 350	1.6
	Spring	Softball	2	40				
	Fall	Touchball	1	22				
	Spring	Speedball	1	22				
IV	Fall	Softball	1	20	20	60	175 x 175	.7
	Spring	Softball	1	20				
V	Fall	Football	1	22	47	244 x 577	304 x 607	4.24
	Spring	Track	1	50				
VI	Fall	Intramurals	2	44	31	160 x 330	350 x 350	2.8
	Spring	Baseball	1	18		90		
					120			9.3
		GIRLS, WOMEN, BOYS AND MEN						
VII	Fall	Archery			32			.7
	Spring	Archery						
VIII	Fall	Lacrosse (g.)	1	20	20	210 x 450	260 x 500	2.93
		Golf Instr.	1	20				
	Spring	Lacrosse (b)	1	20				
		Golf Instr.	1	20				
					52			3.6
	Landscaping, circulation, seating and safety							3.0
					247			20.7

Gym Design

(Continued from page 9)

tion open and the bleachers extended the large gym is 50 feet by 94 feet.

The climbing ropes and flying rings are on a track and the horizontal bars are removable. These and other portable apparatus are in the boys' gym, to which the apparatus storage room is connected. It is possible to move the portable apparatus into the girls' gym, but this is seldom done. There are stall bars in both gyms.

The bleachers seat a total of 320 and the spectators enter from the main corridor without crossing the gym floor. The pupil capacity of this school is 1,260 and we haven't had any complaints about seating capacity.

Both gyms are lined for basketball, volleyball, and indoor baseball. The combined gym is lined for basketball and volleyball.

The pupils going to gym enter the department on the dressing room floor. The routine through the basket storage, dressing room, and showers is the same as described under Layout "A" except that the circulation is much simpler as there is no pool in this layout and the same sex is always assigned to the same gym.

In the girls' dressing room there are 10 dressing booths in addition to the lockers. Fifteen years ago we provided dressing booths for all girls. This was very costly in room space and was hard to administer. The girls themselves in several high schools objected to the booths and asked for the same type of facilities furnished the boys.

Blueprints for the Class B layout will be found on pages 38 and 39.

The superintendent of schools, fearful of such an innovation, called a mothers' meeting when we were planning the new high school. Much to his surprise, the mothers voted for the boys' type of facilities; the ten booths are a concession to the few mothers who voted the modesty ticket. Incidentally, I do not think these booths are ever used. We have had requests to omit the separate shower stalls and it may be that some day this will be done.

We have developed a procedure in these gyms which has proved very valuable. There are no hooks or exposed bolts in the walls or floor for anchoring nets or apparatus. The nets are hung from floor standards which are held by plate inserts. The basketball banking boards are secured by anchor bolts which were set in the walls during their construction. Thus we no longer have trouble with loose banking boards.

The gym is used at night by adults, and we once went to considerable trouble and expense providing separate entrances and shutting off the gym and its dressing rooms from the rest of the building. We now find this is unnecessary. Since it is essential to have a custodian on duty when any part of the school is in use, there is no reason why he cannot easily control the entrances to other parts of the building.

In these modern schools we've gone to considerable expense in giving the gym floor a high gloss finish. The durability of this finish largely depends upon the complete elimination of street shoes.

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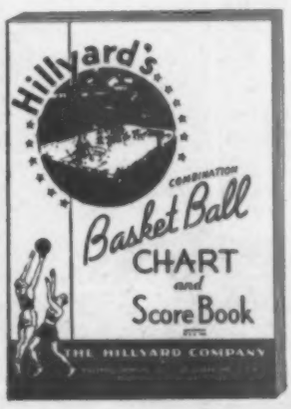

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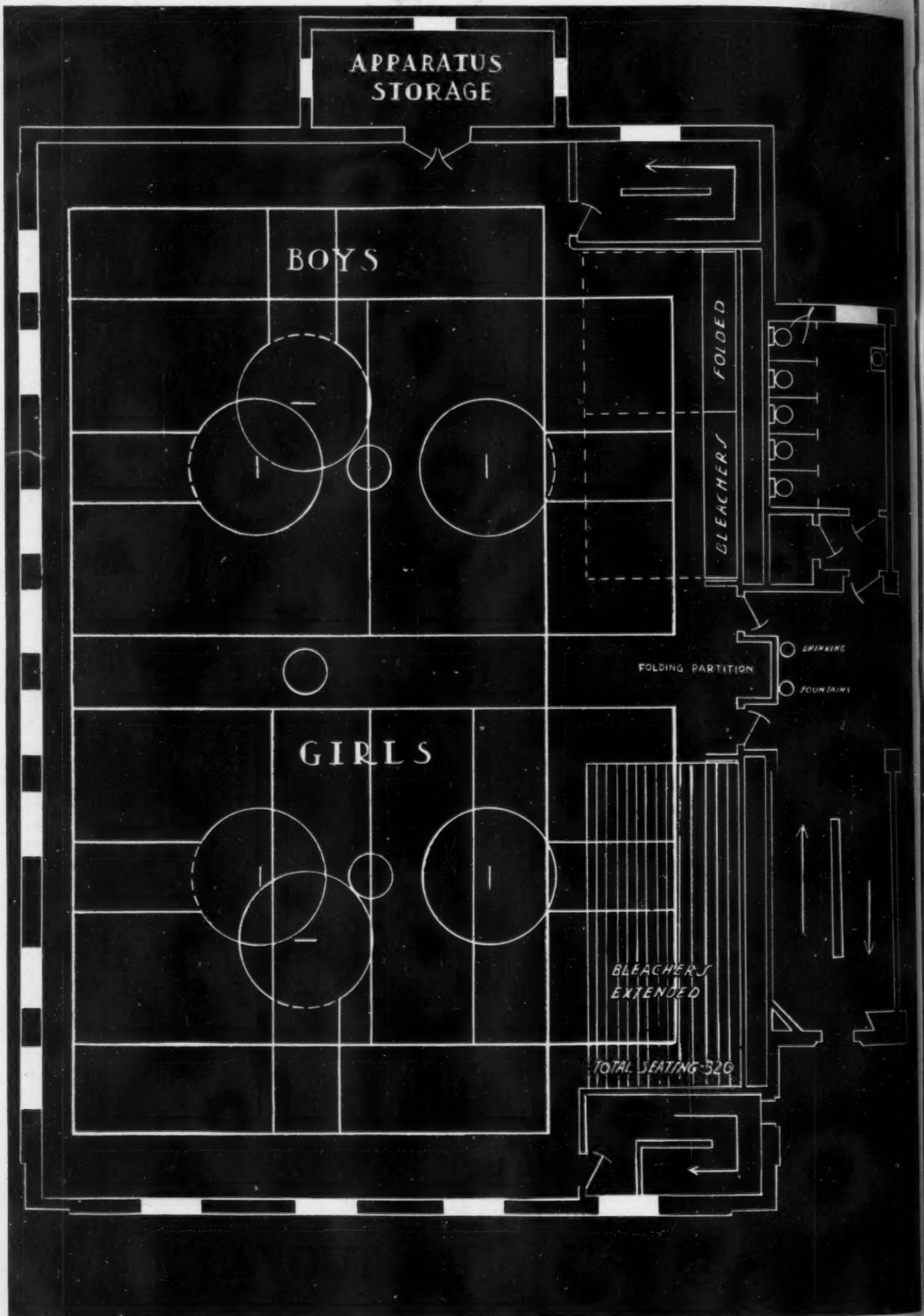
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BOYS
GIRLS
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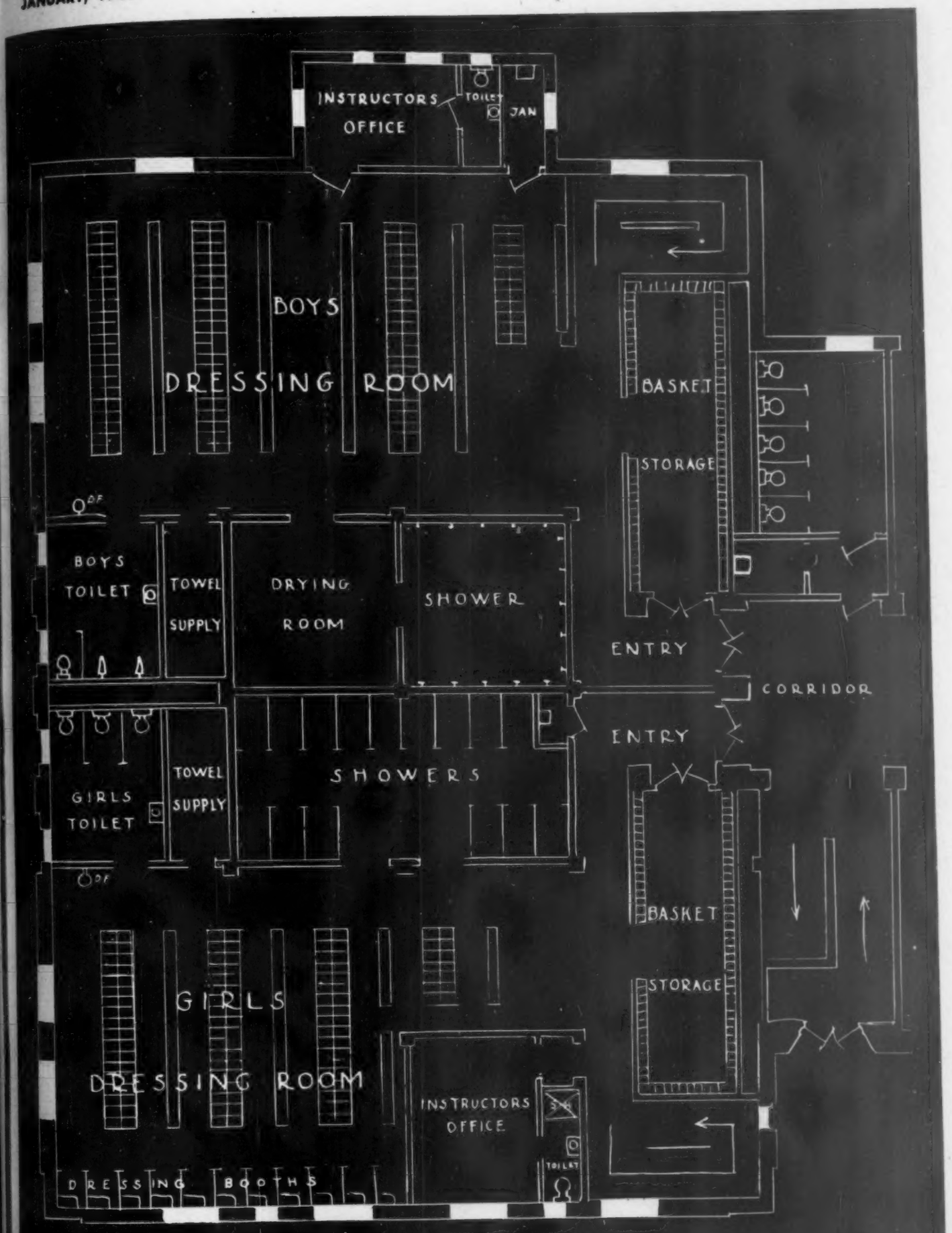
FOLDING PARTITION
DRINKING FOUNTAINS
BLEACHERS EXTENDED
TOTAL SEATING-320


INSTRUCTORS OFFICE
TOILET
JAN
BOYS DRESSING ROOM
BASKET
STORAGE
BOYS TOILET
TOWEL SUPPLY
DRYING ROOM
SHOWER
ENTRY
CORRIDOR
ENTRY
GIRLS TOILET
TOWEL SUPPLY
SHOWERS
BASKET
STORAGE
GIRLS DRESSING ROOM
INSTRUCTORS OFFICE
TOILET
DRESSING BOOTHS

THE PHYSIOLOGY OF FITNESS

By Dr. Thomas K. Cureton

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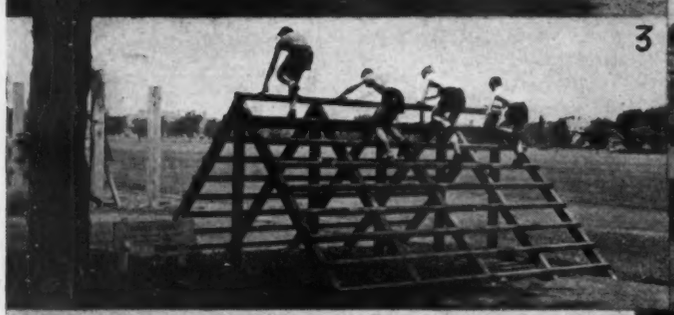
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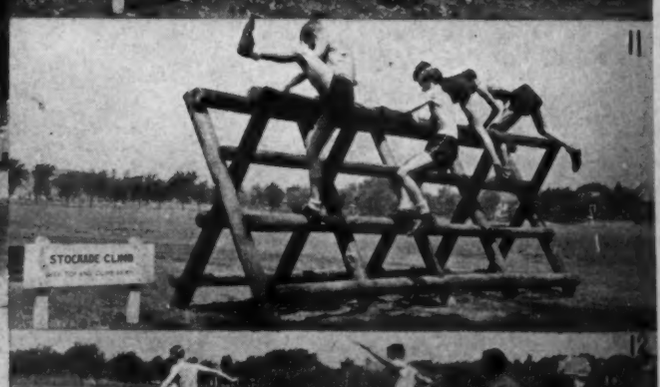
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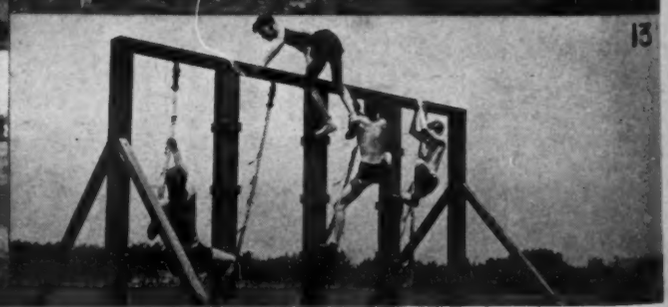
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NO. 5

The Obstacle Course

This is the fifth of a series of articles on physical fitness by the distinguished physical educator and author, Dr. Thomas K. Cureton, who is associate professor of physical education at the University of Illinois.

OBSTACLE courses have become a regular feature of the modern physical fitness program. Requiring a combination of fundamental physical powers, such as flexibility, agility, strength, and endurance, they test the ability to perform a series of fairly difficult feats in rapid succession over a five to eight minute period. They also offer a splendid incentive for all-around motor fitness and an objective score in terms of time.

The Illinois course is 880 yards long; hence, the endurance requirement is great. The best of three times correlates .878 with time for the mile run. The times range from 3:54 to 9:30 with the mean student time 5:83. The run is usually preceded by a slow warmup of 20 to 30 minutes, covering about a mile, and some preliminary stretching and bending exercises of the warmup type.

An improvement of about seven percent is usually made the second time around, due largely to learning the hurdles. The gain over a season (semester) averages about 30 to 40 percent. A good deal of this improvement stems from increased endurance, as corresponding improvements are also noted in the Harvard Step Test, the Schneider Index and in distance running.

An analysis of the Illinois Course and the results obtained seem to substantiate the idea that the course provides valuable training for motor fitness. Some of the shorter courses are probably not as good for endurance training. The addition of a 440-yard swim at the finish would add considerable practical value for military training.

Examination of the obstacles in the Illinois Course shows a prepon-

RUNNING THE COURSE

1. Ditch Jump
2. Double Fence Vault
3. Roost Walk
4. Rope Traverse
5. Arm Support Walk
6. Log Hurdles
7. Fence Weave
8. Culvert Crawl
9. Wall Scale
10. Double Fence Crawl Through
11. Stockade Climb
12. Double Mound Hurdle
13. Rope Climb

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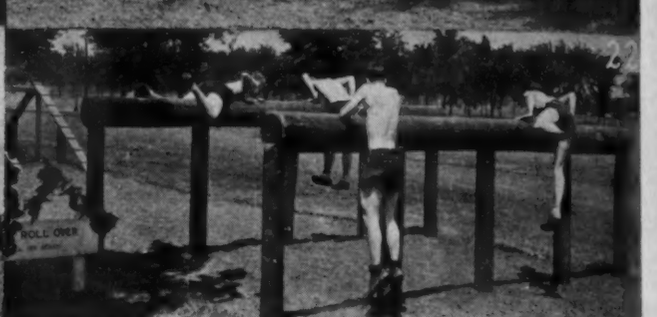
22
ROLL OVER

23

24
MAZE RUN

25
LOG LEAP
26

derance of *agility* events in which men vault, jump, climb, crawl, scale the wall, and dodge the various obstacles in their path.

Several events have been inserted which deliberately aim to develop the *strength* of the hands and shoulders, such as the rope traverse, arm support walk, wall scale, stockade climb, corral climb and rope climb.

Balance is represented in a good many of the activities but specifically in roost walk, the log run, and the roof run.

Flexibility is a great asset in events like the low bridge run, double fence crawl through, culvert crawl and double fence crawl-under.

Power is represented in the initial ditch jump which requires almost maximum speed and effort to clear 10 feet.

Most of all, *endurance* is a great factor in clearing the hurdles with no rest from start to finish. The men quite typically say that it is the most strenuous thing they do in the entire physical training program. It really leaves them "bushed", more so than any other event. It is this very fact, however, that tests their fitness for sustained hard work and stimulates development of the qualities fundamental to motor fitness.

The course is not considered sufficient in itself for the development of enough types of balance, flexibility, agility, strength, power, or endurance. It is possible that most men would develop better under conditions which permit a great variety of fundamental exercises in the areas of emphasis mentioned. The work on the obstacle course must be supplemented by carefully designed exercises which thoroughly work out every part of the body.

Such work is of great value with beginning classes, as gradual progression is possible in all these areas. The fundamental exercises also need to be supplemented by specific skills of great value, such as wrestling, boxing, judo, swimming, etc. Such skills are, of course, not developed *per se* in the general

•

RUNNING THE COURSE

14. Log Run
15. Post Vault
16. Beam Hand-Over-Hand Walk
17. Double Fence Crawl Under
18. Trench Jump
19. Grid Run
20. Corral Jump
21. Low Bridge Run
22. Double Log Roll Over
23. Roof Run
24. Maze Run
25. Double Log Leap
26. Finish

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Distance	Type	Obstacle	Specifications
60′	Power	1. Ditch Jump	10′ Wide; 2′ 6″ Deep
110	Agility	2. Double Fence Vault	4′-6″ High
160	Balance	3. Roost Walk	Roof Top Shape
210	Strength	4. Rope Traverse	18′ Across, 9′ High
260	Strength	5. Arm Support Walk	1′-6″ Wide (Similar to Parallel Bars)
310	Agility	6. 4 Log Hurdles	15″ High
360	Agility	7. Fence Weave	Crawl Through 18″ Gap
410	Agility	8. Culvert Crawl	27″ Diameter, 21′ Long
460	Agility	9. Wall Scale	7′-3″ High
510	Agility	10. Double Fence Crawl Through	10′ Apart; One 10″, one 38″ to low bar; openings between bars 1′-4″
560	Agility	11. Stockade Climb	Over 10′ High and Down
610	Agility	12. Double Mound Hurdle	Over 2′ into 2′-3″ Dip, Over 2′
660	Strength	13. Rope Climb	Up 12′ Rope, Over Top, Down 12′ Rope
710	Balance	14. Log Run	2′-6″ High, 20′ Long
760	Agility	15. Post Vault	4 Posts in Line, 4′ High, 5′-2″ Apart
810	Strength	16. Beam Hand-Over-Hand Walk	Climb 10′ Post, Swing Hand-Over-Hand 10′, Come Down Post
860	Agility	17. Double Fence Crawl-Under	Under 15″ High, 10′ Apart
910	Agility	18. Trench Jump	2′-6″ Deep, Over 3′-6″ Far Bank
960	Agility	19. Grid Run (Straddle High Bar, Run Over Low)	16′ Long, 8 Spaces
1010	Agility	20. Corral Climb	8′-2″ High, Steps 2′ Apart
1060	Agility and Flexibility	21. Low Bridge Run (Stoop Over)	16′ Long, 3′-6″ High
1110	Agility	22. Double Log Roll Over (Roll Over Logs on Belly)	5′ High, 10′ Apart
1160	Balance	23. Roof Run	16′ Wide, Gabled, 6′ Rise and 6′ Drop
1210	Agility	24. Maze Run	14′ Zig-Zag Through
1260	Agility	25. Double Log Leap	2′-9″ High, 10′ Apart
1320	(440 Yds.) Endurance	26. Finish then Run Back 440 Yds.	

body conditioning work nor on the obstacle course, and should be offered in addition to the fundamental work. It stands to reason, however, that many such specific skills can be entered into with greater safety and enthusiasm after fundamental conditioning.

The accompanying table contains the specifications of the Illinois Course. It was designed by S. C. Staley and W. W. Brown in July, 1942, and was built by the Physical Plant Department of Illinois.

The administration is fairly simple. A preliminary list of runners, arranged by flights, is prepared. The men run in flights of four, ten seconds apart. One time clock is used, with the time beginning as the first man starts.

Every flight is numbered—0, 1, 2, 3, etc., the numbers corresponding to handicaps. When the men cross the finish line, they get their time and line up at the clerk's table or designated spot to report it. The men are listed by the clerk in the order they finish; he lists the name, time, flight number, and order of finish. From these data, a revised list can be quickly prepared and the winners announced immediately.

•

THE WORLD SERIES TAKES AN OCEAN VOYAGE

GENERALLY hailed as the best baseball film ever made, the American League movie, *The World Series*, is now being viewed by our services overseas, as well as by the men in camps and bases at home.

The sound-on-film movie was produced by the American League in cooperation with A. G. Spalding & Bros. and Hillerich & Bradsby Co. Written and directed by Lew Fonseca, it offers 22 minutes of dramatic highlights of the 1943 World Series between the Yankees and the Cardinals.

While primarily intended for military distribution, a limited number of prints is available to schools and other organizations in both 16 and 35 mm. size. The only cost is expressage of the print to and from Chicago. Requests should be directed to Mr. Lew Fonseca, Promotion Dept., American League, Room 2420, 310 S. Michigan Blvd., Chicago, Ill.

Lockers - Showers

(Continued from page 26)

mend it, but it is not essential where artificial illumination is adequate and locker and shower rooms are properly ventilated.

2. Luminaires for shower rooms should be moisture-proof, and all fixtures should be chosen and installed to make them as tamper-proof as possible.

3. A floor plan showing the proposed location of lockers, benches, etc., should be prepared so that ceiling outlets can be planned to provide light above service areas where it is most needed, instead of directly above lockers.

Materials and construction

Materials, equipment, and details of construction should be chosen to give the best possible results within existing financial and space limitations encountered in providing such facilities. The nature of the occupancy and the conditions sought also should be given full consideration. The following suggestions are offered:

1. Non-corrosive materials impervious to moisture should be used for floors, walls, ceilings, and partitions. Avoid wood lockers and stalls.

2. *Floors.*—Tile, terrazzo or cement; floors of showers and drying rooms for bathers should be of non-slip material, preferably tile or terrazzo. The slope of the floor of shower and drying rooms should be sufficient to provide rapid drainage during peak loads, but not so great as to make footing insecure. The pitch of such floors toward drains should be not less than ⅛-inch nor more than ¼-inch to the foot. Floors of locker rooms should be designed for adequate and effective drainage; depressions preventing complete drainage should be avoided.

3. *Walls.*—Glazed brick tile ideal, but concrete is satisfactory. Plaster applied directly to concrete or tile will prove satisfactory for locker rooms; in cold climates, exposed walls should be adequately insulated. Glazed tile wainscoting and plaster walls are very acceptable.

4. *Ceilings.*—Plaster cement ceilings, smooth finish for painting and cleaning. Acoustical treatment is recommended and particularly for locker room ceilings.

5. *Ceiling heights.* — Suggested

(Concluded on page 47)

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SCHOLASTIC COACH BOOKSHOP
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Let There Be Light in the Gym

(Continued from page 14)

nasium at Johnny Appleseed School in Mansfield, Ohio, is a typical example of suitable illumination. The equipment and layout were selected on the basis of engineering principles as they apply to the above lighting requirements.

The luminaire used is a totally enclosed 500-watt direct luminaire. This unit consists of a deep, wide spread reflector and a hinged, dust-tight cover with an impact resisting glass lens. The cover, being dust-tight, prevents dust from collecting on the lamp and reflector, a particular advantage in maintaining maximum footcandles. The heat tempered glass will resist severe, sharp impacts without breaking. Thus, no clumsy wire guards are required.

White-bowl 500-watt lamps are recommended to minimize direct source brightness. The deep reflector shields the lamp so that direct lamp brightness is eliminated from most of the lighting units in the field of view.

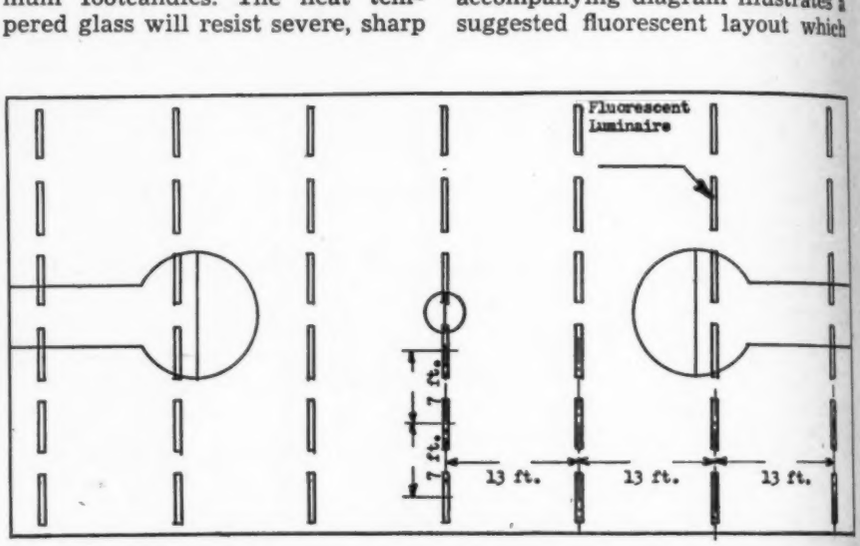
Luminaires are closely spaced to provide acceptable lighting well above the floor and to minimize shadows.

Gymnasium of the future

This type of lighting will provide a tremendous improvement in new or old gymnasiums. It is an economical system to install and maintenance is simple. But new and improved lighting sources allow us to go even farther. The construction of huge war plants has given us a broad experience in the use of fluorescent lighting.

This new light source is the best answer to the most difficult gymnasium lighting problems. The fluorescent lamp is a low brightness source and will considerably reduce the direct glare which is always present to some degree with filament lamps. This means that lighting in many old gymnasiums can be satisfactorily improved without complete rewiring.

A luminaire using two 100-watt fluorescent lamps is recommended. This unit must be fitted with a suitable guard to protect the lamps. To eliminate the possibility of a flashing lamp during a game, No-blink starters should be used. The accompanying diagram illustrates a suggested fluorescent layout which will furnish approximately 30 f.c. Lower illumination levels will be satisfactory, but the higher values are preferred for quick, accurate seeing.



A fluorescent lighting layout for the typical school gym. Luminaire: Fluorescent for two 100-watt lamps. Mounting Height: 20-30 ft. Illumination: About 30 f.c.

Maintenance

Any lighting system must be properly serviced to retain its maximum usefulness. Lamp outages should be promptly replaced with the same type and size of lamp removed. Luminaires should be cleaned every four to six months.

This necessary maintenance is relatively inexpensive if the installation is easily accessible. Luminaires may be mounted on lowering hangers which permit them to be serviced at floor level.

Painting important

The seeing conditions in the gymnasium not only depend upon lighting, but also on the color and reflection factors of ceiling, walls and

other surfaces. Light color, high reflector factor surfaces have three important effects on visibility.

1. Apparent source brightness is minimized when the ceiling and upper walls have a light finish.

2. Reflected light from light walls reduces body shadows to a point where they are barely noticeable.

3. Reflected wall light increases the average illumination level.

Therefore, ceilings, truss work and beams should be finished with a mill white paint. Walls should not be white, as white in the direct line of normal vision will cause annoying glare. A light tint such as buff, gray, green or blue is recommended and light reflector factors should be 50 to 60 percent.

In addition to these large areas of soft colors, accents of vivid colors can be used to enhance the general appearance of the gymnasium.

By carefully planning the lighting system and the decorative scheme, the gymnasium will no longer be that "drab, dingy big room at the back of the school."

The gymnasium can be equally as attractive and inviting as the modern bowling alley or little theatre if Illuminating Engineering is really put to work.

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Lockers - Showers

(Continued from page 45)

minimum for shower rooms 8 feet; locker rooms, 10 feet. Recommend 10 feet to 12 feet, depending on size of floor area; in no case should clearance be less than 8 feet between floors and bottom of ventilation ducts.

6. *Partitions.*—Gang-shower partition walls should be constructed of glazed brick tile. Marble is ideal material for individual dressing and shower cubicles.

7. *Floor drains.*—Adequate drains should be provided for drying and dressing areas as well as showers, such drainage to be away from line of travel or occupancy of pupils.

8. *Windows.*—Place window sills 5 or 6 feet above floor level. Use glass brick or obscure glass for basement, ground floor, or other exposed locations. Frames and sash should be of moisture-resistive material.

In adopting these standards, it is both desirable and necessary that local and specific program housing needs be kept in mind. The suggestions contained herein should be used as guiding principles.

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(Numbers in parentheses denote page on which advertisement may be found)

ON PAGE 48 OPPOSITE THIS SPACE ARE OTHER LISTINGS AND FORM FOR SIGNATURE

Outdoor Lighting

(Continued from page 29)

football played. Floodlights are placed in locations as indicated in Fig. 4, and the number of lights varies from a minimum of twelve in each position up to twenty.

If the stadium is to be used for track or field events, it is generally found necessary to readjust as many floodlights as are needed for the events. Obviously control of the projected light (the photometric characteristics of the floodlights) is of vital importance, particularly where the poles or towers are behind the seating facilities.

Tennis Courts. While football is the biggest money earner, tennis courts also offer a ready means of adding to the school fund. Tennis is very popular with persons of all ages. During the day, the courts can be devoted to the students. At night, fees may be charged neighborhood players through the use of an automatic prepayment time meter. If desired, one or two courts can be kept free at night for student use.

Sport	Fig.	No. of Poles	Mounting Ht. in Ft.	No. Lights	Type Floodlight	Load KW R.V.*	Load KW O.V.**
Baseball	1	8	60-70	100-1500 W.		150	174.0
Softball	1	4	60-70	60-1500 W.		90	104.0
Football	1	8	60-70	100-1500 W.		150	174.0
Football	2	8	50	52-1500 W.	Open or closed Alzak finished aluminum lights.	78	90.5
Softball:							
(2 diamonds)	2	10	50	40-1500 W.	Available in polished and etched reflectors. Most open lights can be converted into enclosed units by addition of door glass and retaining ring.	60	69.6
(1 diamond)	2	5	50	20-1500 W.		30	34.8
Softball	3	8	50	32-1500 W.		48	55.7
6 Man Football	3	8	40	40-1500 W.		60	69.6
Football	4	6	100-130	84-120-1500 W.		126	146.0
Track	4	6	100-130	Readjust as many		180	209.0
Field Events	4	4 (Ends)	100-130	as needed.			
Tennis Courts	5	4 (2 Cts.)	30-35	8-1500 W.		12	13.9
Tennis Courts	5	6 (4 Cts.)	30-35	16-1500 W.		24	27.9
Badminton	6	2	30	4-1000 W.	Etched Alzak Aluminum or Porcelain Enamel	4	4.6
Basketball	6	4	30	8-1500 W.	Etched Alzak Aluminum	12	13.9
Boxing Ring	6	4	18	8-1000 W.	Etched Alzak Aluminum	8	9.28
Bowling Green	6	12	25	12-1500 W.	Etched A. A. or P. E.	18	20.9
Croquet Court	6	4	20	4-1000 W.	Etched A. A. or P. E.	4	4.6
Ice Hockey	6	8	35	12-1500 W.	Etched Alzak Aluminum	18	20.9
Shuffleboard	6	1	20	2-200 W.	Handy Type	0.4	
Skating Pond	6	Spacing and location of floodlights should be adhered to as closely as possible. The watts per square foot recommended are: skating pond 0.5 watt, ski slope 0.1 watt.					
Ski Slope							
Ski Jump	6	6	30	6-1500 W.	Etched Alzak Aluminum	9	10.4
Ping-Pong	6	1	15	1-200 W.	Handy Type	0.2	

*R.V.—Rated voltage. **O.V.—Over voltage 10%.

TABLE OF RECOMMENDATIONS: **Vital data for your outdoor light installations which, if adhered to closely, will give you the best possible levels of illumination.**

Careful planning of the court arrangements generally results in the ability to light twice as many courts at the same expense. If made up in groups of two, as shown in Fig. 5, both courts can be lighted with the same number of floodlights and poles usually required to light a single court.

This would not be sufficient, however, to light three courts. By dividing the courts into groups of two, it is not necessary to illuminate more than two in order to play on one. Also by this method the center courts of a group of three, four or more do not suffer by contrast with those nearer the floodlight poles.

Miscellaneous Minor Sports. The composite chart, Fig. 6, shows how some of the games popular with the unskilled can be lighted. These games are more easily lighted than those requiring a higher degree of skill. At the same time, they are the most popular with the general public because they can participate in them. To encourage participation for all, it may be well to keep this type of sport in mind when planning your lighting program.

The accompanying table of recommendations, based on data collected over a period of years, will result in satisfactory lighting for a given situation if adhered to as closely as possible. Local conditions and individual preferences naturally may vary the levels of illumination and to some extent the methods of application, but as far as possible these recommendations should be followed for the best obtainable results.

Operating your plant at 10 percent over-voltage is a recommended practice. This will give you an increase of about 35 percent in brightness for only a small increase in the cost of operation. While it will reduce the life of your lamps, the cost of lamps is relatively a minor factor.

SCHOLASTIC COACH MASTER COUPON

(See page 47 for other listings)

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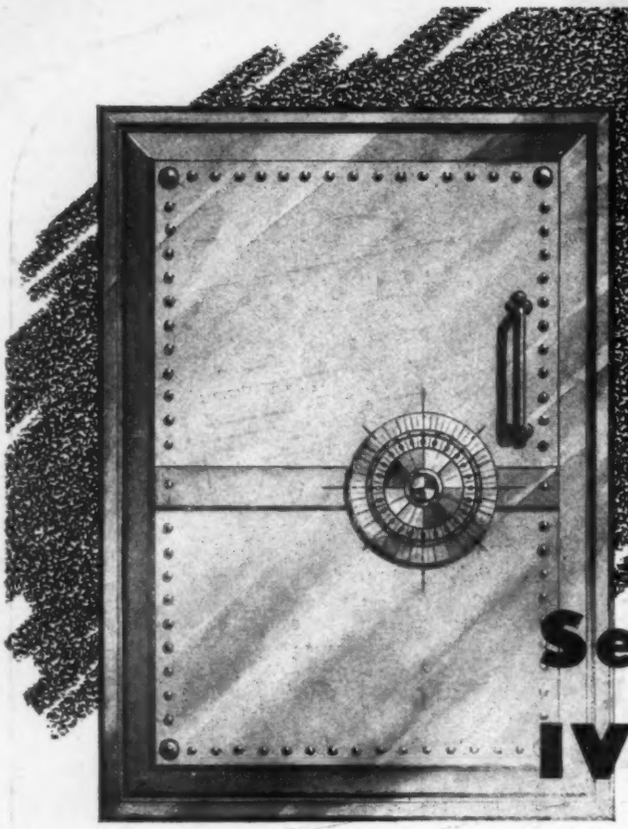

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When you allow your irreplaceable football equipment to be taken from your supply room by any reconditioning firm, first, you should take the trouble to check up on the firm's financial standing, general all around reputation, and ability.

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